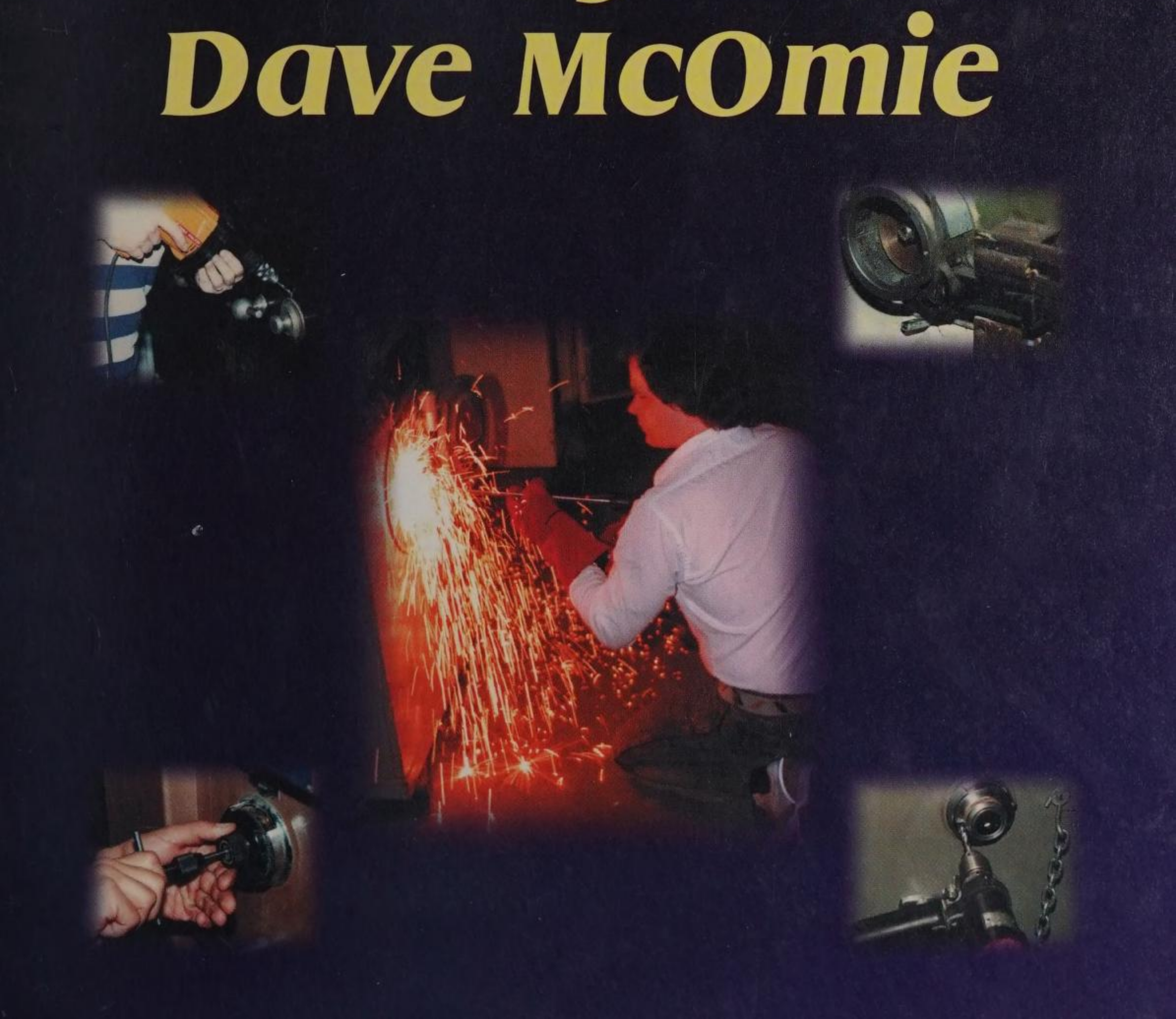
The National Locksmith®

presents

10 Years of Dave McOmie



To Don Simmons —

Friend,

Picker

and

Purveyor of good taste
in all things
in this life.

Dave McOmie

20 June 2000

The National Locksmith®

presents

10 Years of Dave McOmie

by Dave McOmie

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10 9 8 7 6 5 4 3 2 1

The National Locksmith
National Publishing Company
1533 Burgundy Parkway
Streamwood, Illinois 60107

Printed in the U.S.A.

— *Acknowledgments* —

As usual, I am indebted to many people for project assistance. But the most pressing debt is to Jim Darow, whose experience and expertise in the printing and publishing world made this book possible. His tireless efforts resurrected many long-dead articles and his commitment to excellence turned the merely possible into the really real. Thanks, Jim.

— *Disclaimer* —

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— *Dedication* —

This book is dedicated to the readers of *The National Locksmith* magazine. Without your support, the articles in this volume would have been consigned to the dustbin of history. That they endure pleases me greatly and gives testament to the symbiosis between a grateful author and his audience.

— About the Author —

Dave McOmie has been writing on safes and vaults since coming on board The National Locksmith *in the Spring of 1986. Now ten years later, he is recognized worldwide as* **the** *authority on safecracking. Dave is Director of The National Safeman's Organization, author of The National Locksmith Guide to Safe Opening, Volumes 1 through 5, The National Locksmith Guide to High Security Safes, Volumes 1 and 2, Penetration Party, and has written more than 200 technical articles. The Editors at The National Locksmith caught up with Dave and the following is excerpted from their chat.*

TNL: Dave, most people in this business know who you are, but few know how you got into the business. How did it happen?

DM: I was fascinated by Alexander Mundy, the fictional super-thief played by Robert Wagner in the 1960's TV Show, "It Takes A Thief." Mundy could crack any safe, pick any lock, and pick up any girl. Driven by a desire to be just like him, I started sweeping floors at a local safe and lock company. Insatiably curious, I started taking locks and safes apart, figuring out how to defeat them; before long I was picking locks and opening safes right alongside my boss, Eugene Corey. Later I worked for Northwest Safe Company, and then Allied/Gary. Although I became an expert safecracker, I never quite matched Mundy's sophistication or success with the fairer sex. It must have been the aftershave.

TNL: Have you ever earned your living outside this industry?

DM: Yes. During my last two years at Allied, I played lead guitar in a country band. I would open safes from 8 AM to 5 PM, have dinner and play guitar from 9 PM to 2 AM. Finally, the band had a shot at the big time, so I left Allied and continued in the band for another three years. We worked the casino circuit in Nevada, the club circuit in the western states, taped several television shows, cut two albums, and opened for Emmylou Harris, Tammy Wynette, George Strait, Jerry Reed, and a few others. It was great fun, but the pay was even worse than it is in the safe business. Fortunately, I was able to do freelance safe opening to supplement my income. Eventually, the night life fun wore off, and the freelance business go so busy that I couldn't keep doing both, so I quit music and came back to my first love: safecracking. It was a good thing, because I had just about blasted my ears to Kingdom Come standing in front of a high-powered guitar amplifier six nights a week.

TNL: You are hearing impaired?

DM: Yes. I wear hearing aids and couldn't function without them. Thank goodness for modern technology.

TNL: Well that brings us to the present. What are you currently doing?

DM: Four things. First, I am Director of The National Safeman's Organization and Editor of our newsletter, The National Safeman. In those capacities I am responsible for the content of our newsletters and technical files. Second, I write books on safecracking. Third, I write philosophical and political essays for publication mostly in journals of opinion. Currently, I am working on a book about ethical issues, such as abortion, capital punishment and the like. Fourth, I still run my one-horse safecracking business, although I have slowed down considerably. Whereas I used to open five to ten safes a week, I now open two maybe three. I ruined my knees being too stupid and macho to wear kneepads on all those in-the-floor openings. Now, even though I am smarter, the damage has already been done. These days, I try to stick to high security safes, vault doors and freestanding safes.

TNL: Tell us a little about your background in philosophy. This is something that few people in this industry know about.

DM: I hold a master's degree in philosophy from the University of Washington, and have worked closely with Mortimer Adler, who is the Director of the Institute For Philosophical Research. In some ways, philosophy reminds me of safe opening. Both are like jig-saw puzzles that are challenging to figure out. The difference is that opening a safe is a puzzle about a physical object, whereas much of philosophy consists of puzzles about non-physical objects, such as the meaning of life, the existence of God, morality, and so on.

TNL: Is another difference between them the fact that you have been eminently successful at figuring out all the safe opening puzzles, but only a few philosophical ones?

DM: Yes. Philosophy's challenge is humbling. But even if I never reach The Truth about the universe and humankind's place in it, the journey itself will have been richly rewarding and worthwhile.

TNL: Have you ever been humbled by a safe?

DM: Oh yes, many times. Oddly, it is most often the "easy ones" that end up being the most trouble. My most recent humbler was an old Meilink fire safe with a spinning handle. This indicates a broken shear screw, which is usually a simple opening. All you do is side or top drill, and push in on a bolt or a boltbar. Well, this one had a pivoting boltbar that had to be pulled–not–pushed–to retract the locking bolts.What a mess I made.

TNL: Dave, what advice would you offer newcomers to the business?

DM: I would ask rookies to examine their reasons for wanting to be in this not-so-lucrative industry. Most of us in the nuts and bolts end of this business are in it because we love it, and we do not delude ourselves with daydreams about pots of gold at the end of the lock and safe rainbow. Beyond that, I have only two pearls to cast: First, work on your people skills—always be as polite and well-spoken as you can. Far more customers are lost by employee rudeness or indifference than by incompetence. Second, educate, educate, educate. Take classes, read trade journals and books, talk to your peers—in short, be the best you can be. The combination of people skills and upgraded technical skills is unbeatable.

TNL: If you had it to do over again, what would you change?

DM: Well, I wish I were a better locksmith than I am. In this era of specialization, my skills are embarrassingly limited. Recently I locked the keys in my 1993 Honda Accord and had to call a locksmith friend to let me in. He laughed about it for weeks and went around telling everybody!

TNL: Any final words?

DM: You know, the lock and safe industry has effect on its practitioners unlike that of any other industry I can think of. How many plumbers or electricians or carpenters or doctors or lawyers can you think of who eat, breathe and sleep their profession? For many of us it is both a lifelong obsession and a love affair. And I would like to think that it shows in our work. After all, besides our family, friends, and work, what else is there?

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Opening A Mosler Bahmann

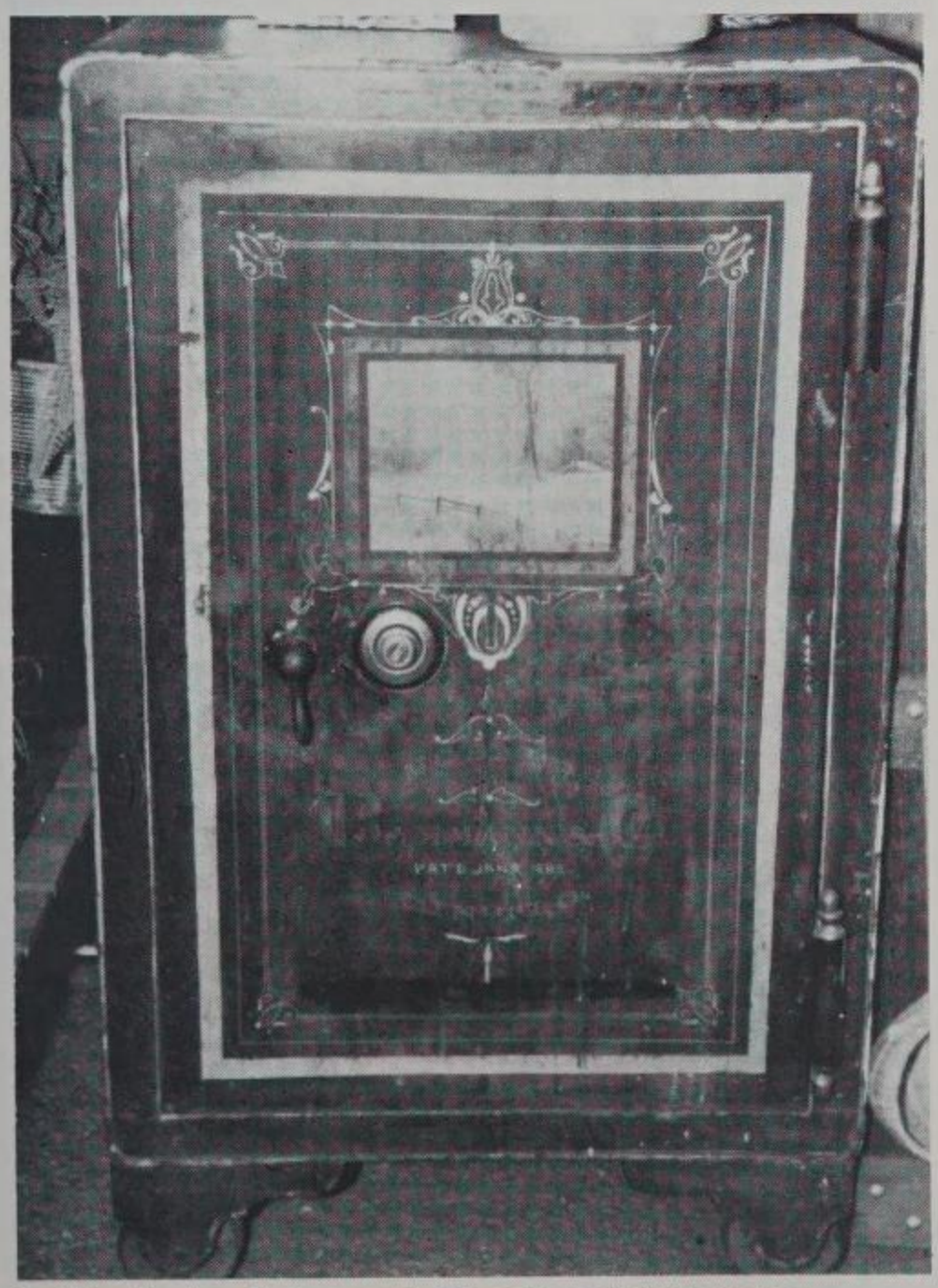
"Awhile back I followed behind a young knob-knocker who had dutifully knocked both dial and handle off, but had left in a big hurry with the police close behind."

by Dave McOmie

Some knob-knockers never learn. Though not as active as they used to be, every so often they still crawl out from under their rocks and with their hi-tech tools such as hammer and screwdriver proceed to butcher what seems like half the safes in town. Luckily for the business owners and much to my relief, most of these creeps are crude amateurs and rarely do they gain entry. Evidently they live by the motto "if at first you don't succeed...," because they certainly do keep trying and trying. And failing and failing.

Awhile back I followed behind a young knob-knocker who had dutifully knocked both dial and handle off, but had left in a big hurry with the local police in hot pursuit. Alas, he must have been wearing sneakers; they were not able to catch him. Darn! What made this job a little different however, was not the fact that our villain was a track star, but that he had chosen as his prey one of the more interesting and unusual safes ever built by the Mosler Safe Co. But more about this jewel in due course.

It is probably fitting that I introduce myself, as this is the first time I have had anything published in *The National Locksmith* and the Editor has asked me to say a word or two about my background.



1. The Mosler, Bahmann & Co. safe as it looks today.

A native Portland, Oregonian, my first and lifelong love was and is the art of safecracking. I apprenticed under Mr. Gene Corey, originally of Corey Safe & Lock (Spokane), spending all my spare time after school and on weekends throughout most of my adolescent years either at his shop or home; learning and absorbing everything I could. These years proved invaluable. Mr. Corey was from the old school and showed me many techniques. Some of these may no longer be in vogue but let me tell you, I have fallen back on them many times and extricated myself from some very difficult situations. It was during this period of time, at his urging, that I began taking pictures and compiling drill point information on every safe I could get my hands on. Today my collection of pictures and drill points fill a medium size suitcase and is still expanding.

After high school I spent eight years working for the two large safe companies in our area; Allied Safe & Vault (who now owns Gary Safe), and Northwest Safe Co., a smaller but progressive outfit. For the past few years I have been freelancing, doing safe openings on commission for various lock and safe companies throughout the Pacific Northwest, primarily in the Portland area.

I feel fortunate to have been exposed to both the new and old schools, and am grateful to all my former employers for giving me the opportunity to learn one of the most fascinating (and at times frustrating) trades known to man. Enough said. With introductions behind us, let's return to the burglarized Mosler.

It was mid-morning. I was halfway through my coffee and doughnuts when the call came in. The lady was obviously upset. Someone had broken into her place of business, beat up her safe and broken off the dial and handle. The police had been there, and the locksmith she had called *early* that morning had finally shown up; only to take one look at the safe and tell her he did not have the proper equipment to do the job and that she should call me. Thank you very much. I'll take 'em anyway I can get 'em!

So I took the routine service call information, then asked her to describe the safe to me. Well it's about five feet high and three feet wide and looks very old. Does it have wheels? Yes. This established with relative certainty that we were dealing with an old fire safe. Can she see any names or numbers anywhere on the front of the safe? No. Can she describe the dial and handle (that are now missing)? Well yes. It had a funny handle. You could spin it 'round and 'round until you dialed the combination. Then the handle would catch and you could open the safe. BINGO! With this piece of information I had it pegged. This was no ordinary old timer, it was a Mosler Bahmann using the Yale #062½ offset lock with a free spinning handle.

After giving her a quote on the opening and an estimate on

the repair, I finished my now lukewarm coffee and custard filled doughnut and went out to my truck. (Without knowing the extent of the damage I could not quote the repair.)

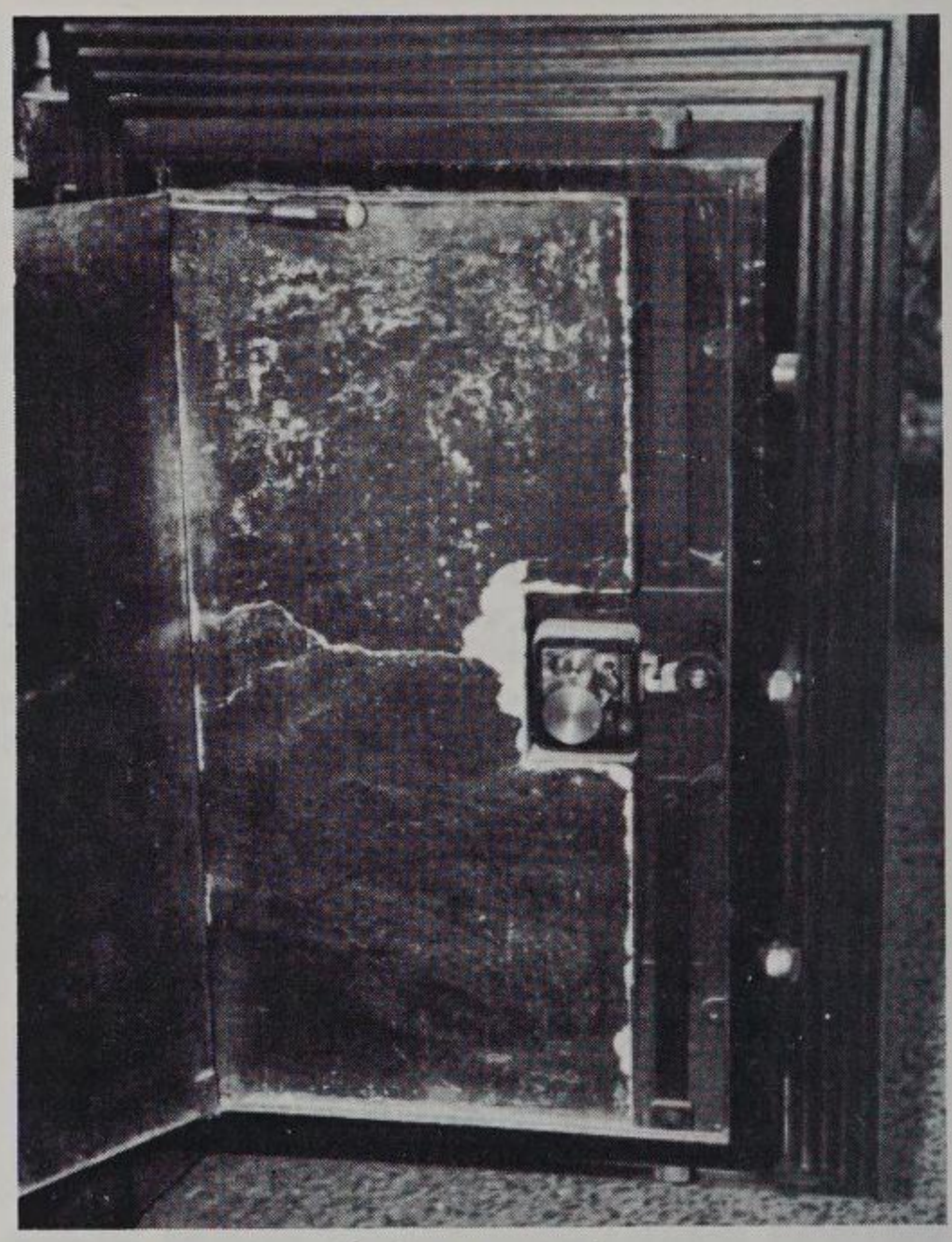
Many people ask why I need all this information over the phone. Why not be satisfied that the safe is locked up and go open it? Well, there are two reasons. First and foremost is efficient scheduling. If a call comes in to open a small home safe I know that another call can be scheduled right behind it with no problem. However, if it is a lockout on, say a Diebold TRTL-30 tribolt lug door, I had better pack my lunch and if possible put all other calls off until that afternoon. The second reason is that I like to prepare myself mentally for each opening. Driving to the job I like to visualize the safe, imagining all the possible things that could be wrong, and formulate a plan of attack en route. It really helps. In this case, it would allow me to refamiliarize myself with the Bahmann before getting to the job.

2. The back plate, showing manufacturer's name.

In the back of my truck sitting comfortably on a padded stool, I opened my photo collection, scanned through and found the Mosler column. This section is so large that I have it subdivided into three categories: round doors, square doors, and fire safes/vault doors. Sure enough, in the very back of the lattermost category, right in front of "Protectall" were three pictures I had taken of a Bahmann while servicing it a half dozen years earlier. On the back of the pictures I had meticulously recorded all the pertinent information such as drop-in point, drill point, thickness of the door to the lock, etc. After scrutinizing the pictures, I theorized that if the broken handle shaft could be pushed in far enough to disconnect from the lock, I could drill a small hole through the side and push the center bolt back, which would carry the other bolts back with it. There was of course, always the option of using an emergency dial and makeshift handle if conditions were favorable. I would make the decision after seeing the safe. I took down the measurements to drill for the center bolt, stuffed the paper in my shirt pocket and headed out to the job.

Upon arrival I grabbed my black tool case and went in to examine the safe. It was old indeed. Cast iron, with rounded body, square door, and medium size wheels; it was missing both dial and handle. It was also covered with the sootlike powder that fingerprinting crews leave. Boy, those guys *never* clean up their mess! Using a couple of shop towels I wiped it down, and could then read in faded letters the words Mosler, Bahmann & Co. spelled out across the front of the safe. I checked the hinges making sure they were intact, and also checked the door for play, which indicated there was nothing wedged between the door and jamb. Then I zoomed in to inspect the damaged parts. The dial spindle had severed about an inch below the surface of the door. The handle shaft had broken off flush with the door. This can make for a real headache when using an emergency dial, so I opted for the alternate method. I was itching to try it anyway.

After sneaking a peak at the piece of paper in my shirt pocket, I measured, marked and double checked my drill point on the side of the safe. I then pushed the handle shaft into the safe. With a loud clank it hit bottom. Grabbing my Hornet, I chucked in a 3/16×6 high speed bit and set the speed at 1500 rpm. I drilled my hole through the side, hitting the top of the center bolt and pushed it back. This brought all the other bolts back, and with a couple of large screwdrivers I pried the heavy door open.

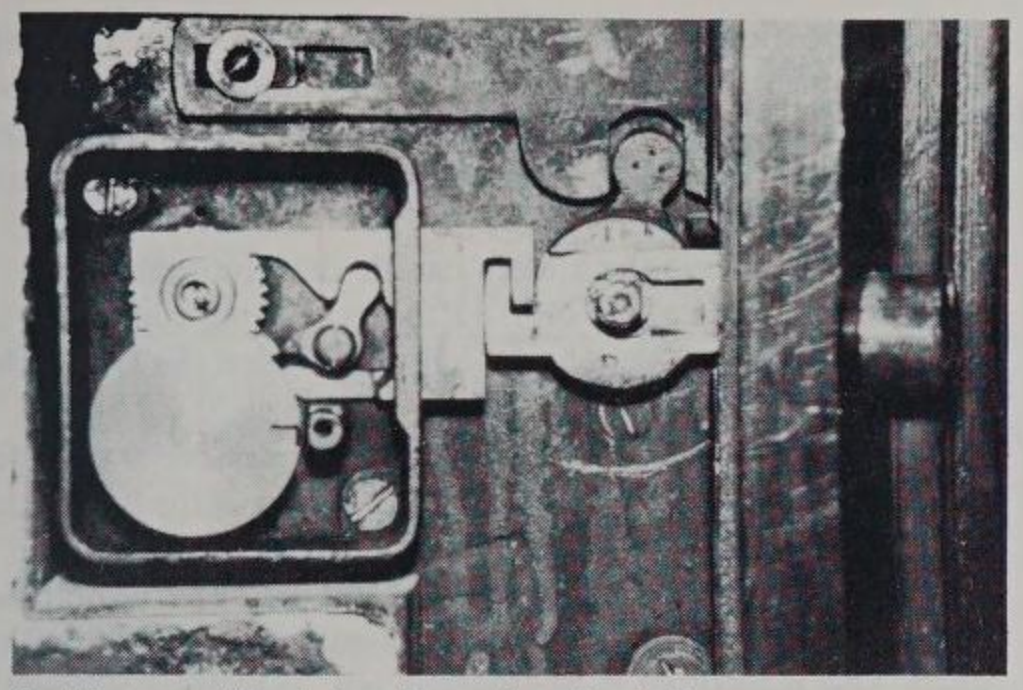


3. The boltworks and lock are exposed.

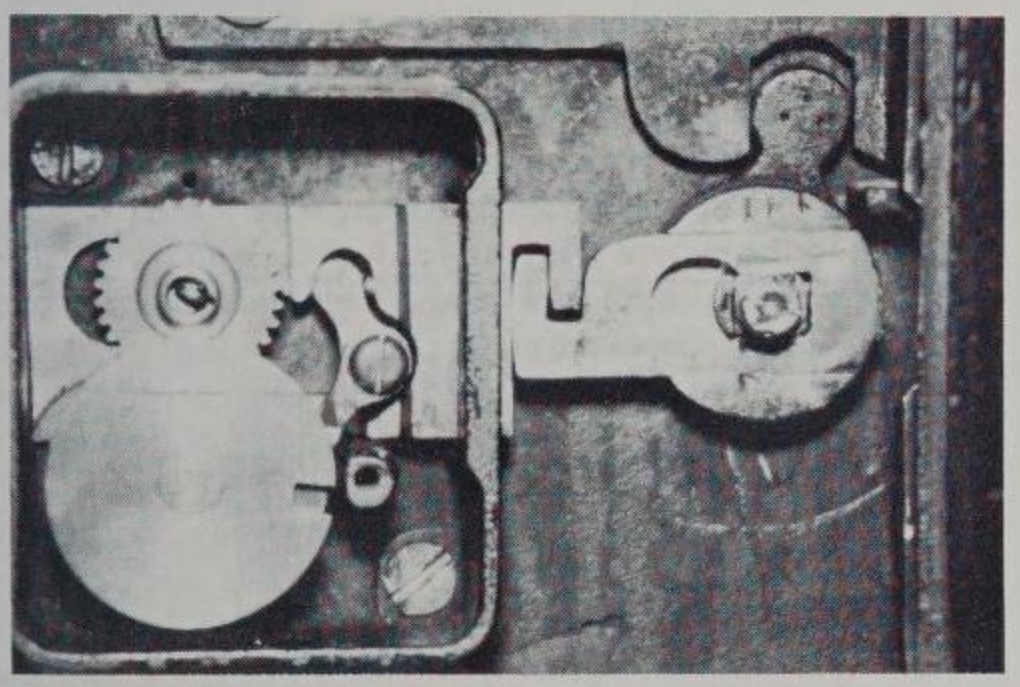
Before you could say "there was a better way" I had a tapered steel pin pounded into the hole, ground and sanded it down, and had a coat of primer over the area.

While waiting for the primer to dry, I started to disassemble the lock for servicing and to inventory what I would need to complete the repair. Then it hit me like a bolt of lightning. There indeed, *was* a better way to open this safe. Although drilling through the side was fast and didn't require much repair, this safe could have been opened *without drilling a hole at all!* This method will be covered along with other specifics about the Mosler Bahmann later in the article, but first let's finish the repair.

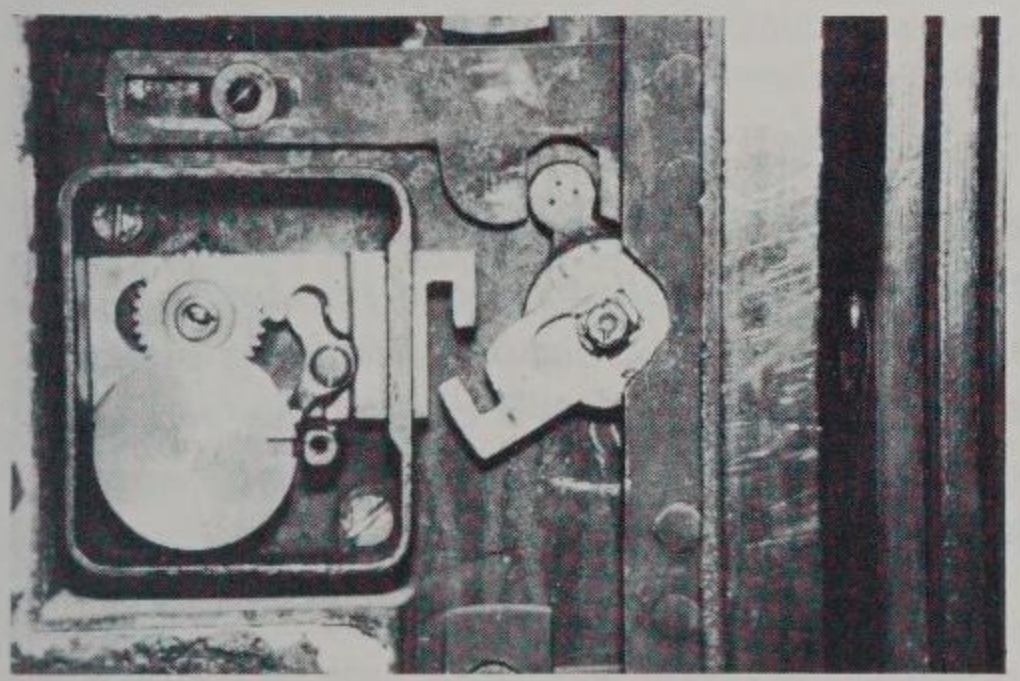
As it turned out, all I had to do was have the handle repaired and replace the dial. The good folks over at Paul Brong Machine Works repaired the handle, and I found an old dial that had enough spindle length and was properly threaded 5/16×40. A new Sargent & Greenleaf or LaGard dial could have been used, but this would have taken away from the antique look of the safe. This was very important to the owners, who keep the safe more for its antique appearance than for any other reason. I lubricated and reassembled the lock and handle assembly, then put several coats of semi-gloss black over the



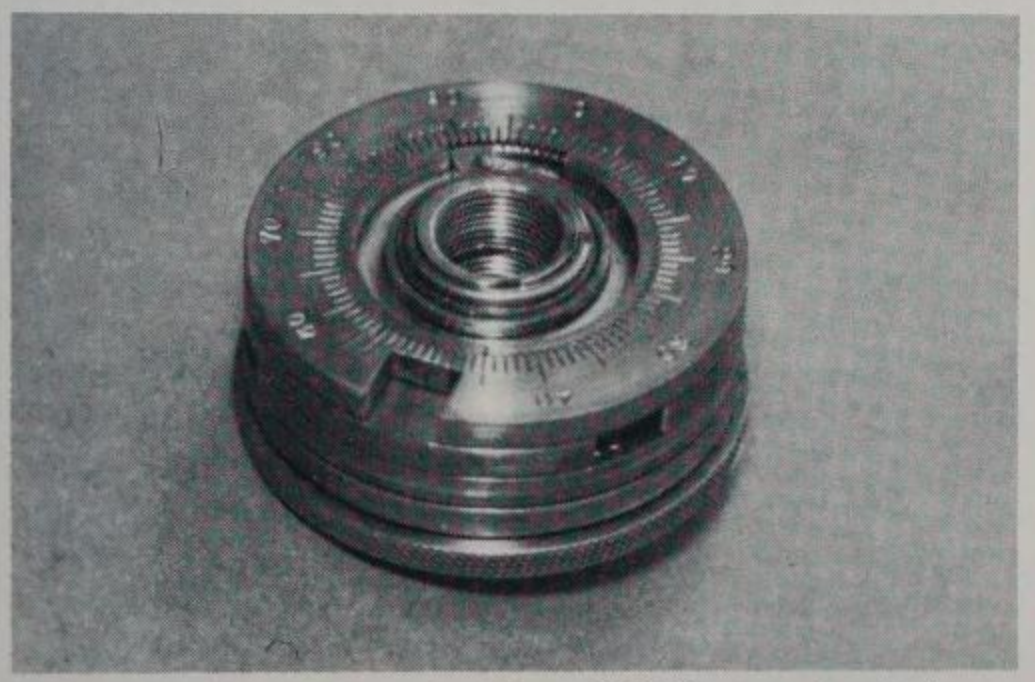
4. Closeup of lock, handle and center bolt.



5. Lock is in unlocked position.



6. Handle is thrown and bolts retracted.



7. The wheel pack is made of four 1⅞" diameter hand change wheels.

sanded primer. Photograph one shows the safe as it looks today.

Photograph two is of the back plate, showing the manufacturer's name. Mosler may have gotten top billing, but Mr. Bahmann sure got his name written fancier!

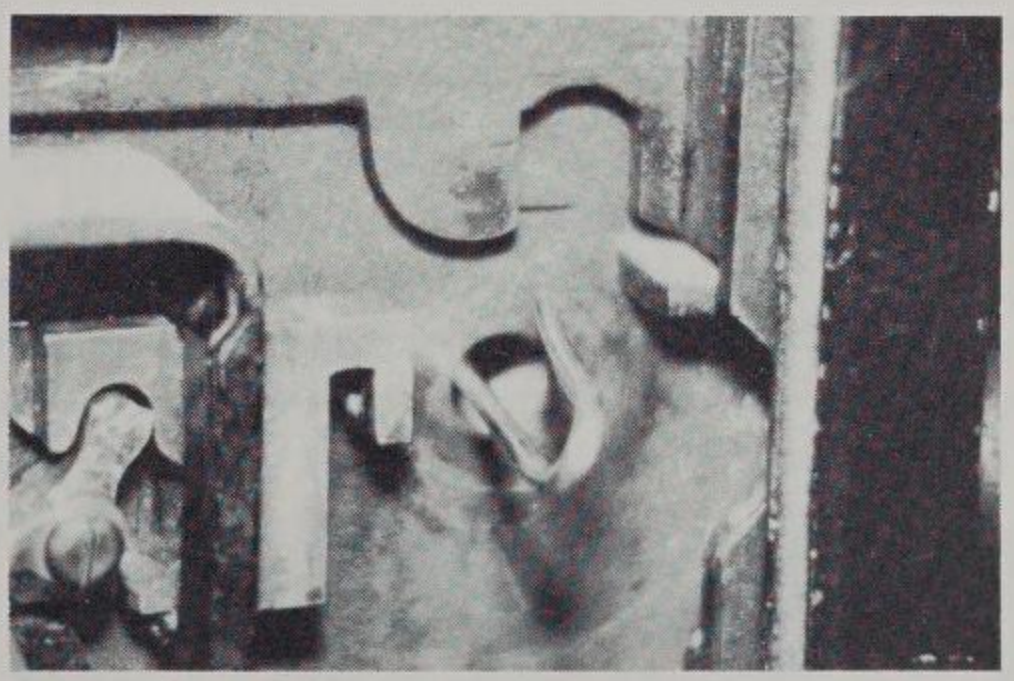
Photograph three, with the hinged back plate swung open, exposes the boltworks and lock. There are five large bolts, measuring 1⅛" in diameter. One top bolt, three side bolts and one bottom bolt. The overall door thickness is six inches, the distance from the face of the door to the lock case is 3¾". The distance from the face of the door to the center of the bolts is 4½".

Photograph four is a close up of the lock, handle and center bolt. The inside washer and nut that hold the handle assembly together have been removed, along with the back cover of the lock, giving us a clear view of the happenings here. In this photograph the safe is in the locked position. The handle is disengaged from the boltworks and will free spin in this position. Observe the Yale #062½ offset lock. The offset from spindle center to actual wheel center is 1¼" down. The drop-in point where the fence enters the wheel gates is 90. The wheel with the rectangular slot is not one of the combination wheels. A nub on the back cover fits in the slot and prevents the wheelpack from unscrewing.

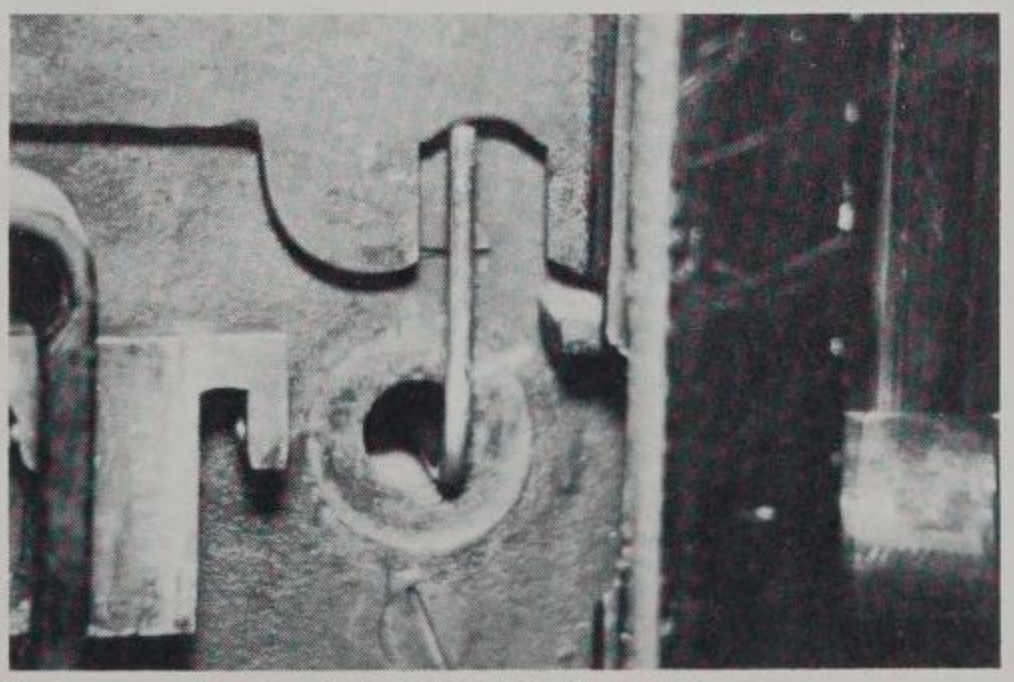
Photograph five shows the lock in the unlocked position. The combination has been drilled, the dial has been turned right to the stop position, and the lockbolt has been retracted, engaging the handle with the boltwork.

Photograph six shows the lock in the unlocked position, the handle thrown and the bolts retracted.

Photograph seven shows the wheel pack, made up of four 1⅞" diameter hand change wheels.

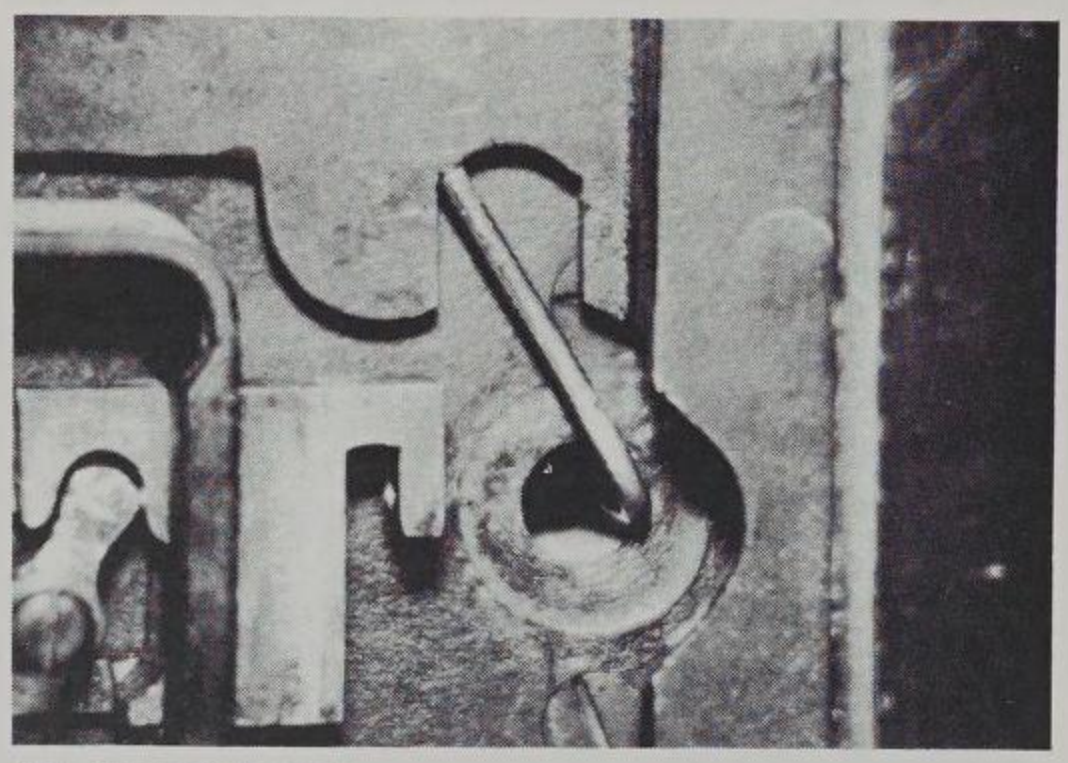


8. Insert "U" into the handle hole.



9. Engage the tip of the "L" with the bolt bar.

To open this safe when all the parts are in working order, assuming no knob-knockers got there first, you need to compensate for the offset which is 1¼ down. This will give you actual wheel center. The safest place to penetrate the lock case is around seven or eight o'clock. I would penetrate the lock case 1⅛" to 1¼" out from actual wheel center, view the wheels with a borescope and transfer to the drop in point. You could drill a hole in closer to sight the wheels by eye, but the driver is in front, is geared, and the first wheel of the combination is the one furthest from you. This requires extremely precise drilling in order to see all the wheels, and can be somewhat problematic. I like the safer, surer, method. After all, I didn't buy my scope to let it collect dust. I also would not drill this lock at the drop in point, unless a malfunction made it necessary to do so. I do not like drilling anywhere near a gear if I can help it!



10. The safe is open.

As I mentioned earlier, there is a way to open this safe without drilling a hole at all. This method is most applicable to a Bahmann that has been burglarized and had the handle broken off. Here are four easy steps that will get you into the safe pronto.

1. Push or punch the broken handle shaft into the safe.
2. Take a piece of ⅛" or 5/32" brass welding rod, put a 2" U-shaped bend on the end of the rod and insert the U into the handle hole. This is pictured in photograph eight.
3. Pull the rod back fairly hard against the inside of the safe, bending the U into an L shape. Engage the tip of the L with the bolt bar. This is pictured in photograph nine.
4. Step 4. Turn the rod clockwise. This will slide the bolt bar back, which in turn will retract all five bolts and the safe will be open! This is pictured in photograph ten.

You could probably achieve the same result by tipping the safe on its side and vibrating the door with a buckshot filled hammer. But most Bahmanns are very heavy; I think going for the bolt bar would be faster and much cleaner.

Remember that you are on the outside of the safe, and that these pictures were taken from the inside. What appears to be at 3 o'clock in the picture is actually at 9 o'clock on the outside, and vice versa. Also, clockwise and counterclockwise movements are reversed from the picture to the outside of the safe. It is important to bear these things in mind whenever you are analyzing a picture with the express purpose of deducing a drillpoint.

Well that about wraps it up for this month guys, but before signing off I want to make sure all you antique safe buffs are aware of the newly formed National Antique Safe Association. (doesn't that make for a great acronymn?) You can write them at P.O. Box 110099, Aurora, CO 80011. See you next month! ■

The only problem with my little trick for opening Mosler-Bahmann through the handle hole is getting the handle arbor out of the way. Pulling it out the front is possible but not very practical. Punching it in is problematic because the long arbor will hit the back panel long before it is in far enough to drop down out of the way. In retrospect, I guess the best way to open it is exactly as I did: side-drill for the center locking bolt 1/4" down from dial center, 4-1/2" back.

Safe Opening Seminar

"In the back of the shop waiting to be opened were a York 400 line lug door, an HHM lug door, a Diebold T-hinged round door, a Sentry, a Major, and a Diplomat safe."

by Dave McOmie

My good friend, Neal McMahon, president of Emergency Locksmiths Inc., of downtown Portland called the other day. He had acquired a half dozen safes and needed some drillpoint information, as they were all locked up and needed to be opened so they could be converted into saleable items.

One by one I had him describe the safes to me, and by the time he was finished, we both knew he had a basketful, and that more than likely my services would be required. In the back of his shop just waiting to be opened, were a York 400 line lug door, a Herring Hall Marvin lug door, a Diebold T-hinged round door, a Sentry liftout round door, a Major fire safe and an imported Diplomat fire safe.

I felt I could talk Neal through the latter three (actually he could have opened these without my help, but consulting me usually eliminates any drillpoint guesswork), but I knew the other three would need some personal attention.

We agreed on a price for which I would open the three more difficult safes, and began discussing methods of opening the other three when an idea occurred to me. I had planned on giving an intermediate level class on safe penetration in the near future, and here was a great opportunity to make it a real "hands-on" class with six safes to drill open.

I ran the idea by Neal, offering to open all six safes during the course of the class, and suggested that he and one employee be allowed to attend at no charge. In return, he would supply tables and chairs, move all the safes out into the "classroom" area, and for all intents and purposes, turn his shop into a classroom for a day.

We agreed that this arrangement would work well for both of us; he would get all his safes opened and learn in the process, and I would have a classroom full of locked safes.

Later that same morning, I stopped by to see Neal, survey the situation, and to get a look at our classroom materials. The safes were precisely what I thought they were. The only one I had reservations about opening in the class was the York. The last one I drilled had taken about an hour just to drill a ¼" hole, and I really felt that given the number of safes we had to open, that we could not afford to spend a whole hour putting a hole in just one safe. So I manipulated the York open, and took Neal to lunch where we ironed out the final details of the class.

The class was made up mostly with former students, the majority of them having already attended one of my basic penetration classes. This being the case, we skimmed over some of the basics, such as U.L. labels, tools of the trade, trouble-shooting and went through a quick refresher on Sargent & Greenleaf locks.

Many general locksmiths have a pretty good handle on those safes that use S&G or La Gard type locks (which are the great majority of safes built today), but seem to be a little shaky when confronted with a safe not using one of these locks.

This is certainly understandable; it is a matter of experience. I can usually impression a key to a 5 pin Ford lock with no problem, but having no experience with the new ignition locks that have a zillion wafers and a sidebar, I would likewise be a little shaky if I were put on the spot and had to fit a key to one. My point is that we all have weaknesses which are usually due to a lack of knowledge and experience. These weaknesses can be overcome by subscribing to trade journals such as this one, taking technical training classes, and by converting this newly found knowledge into experience by applying it on the job.

Most of my students this day had a weakness on opening safes that do not use S&G or La Gard locks. (But they all know how to fit keys to 84½ and newer Ford ignitions!) The safes we had to open were perfect for the occasion. Only one of them had an S&G lock, and this we were going to bypass anyway.

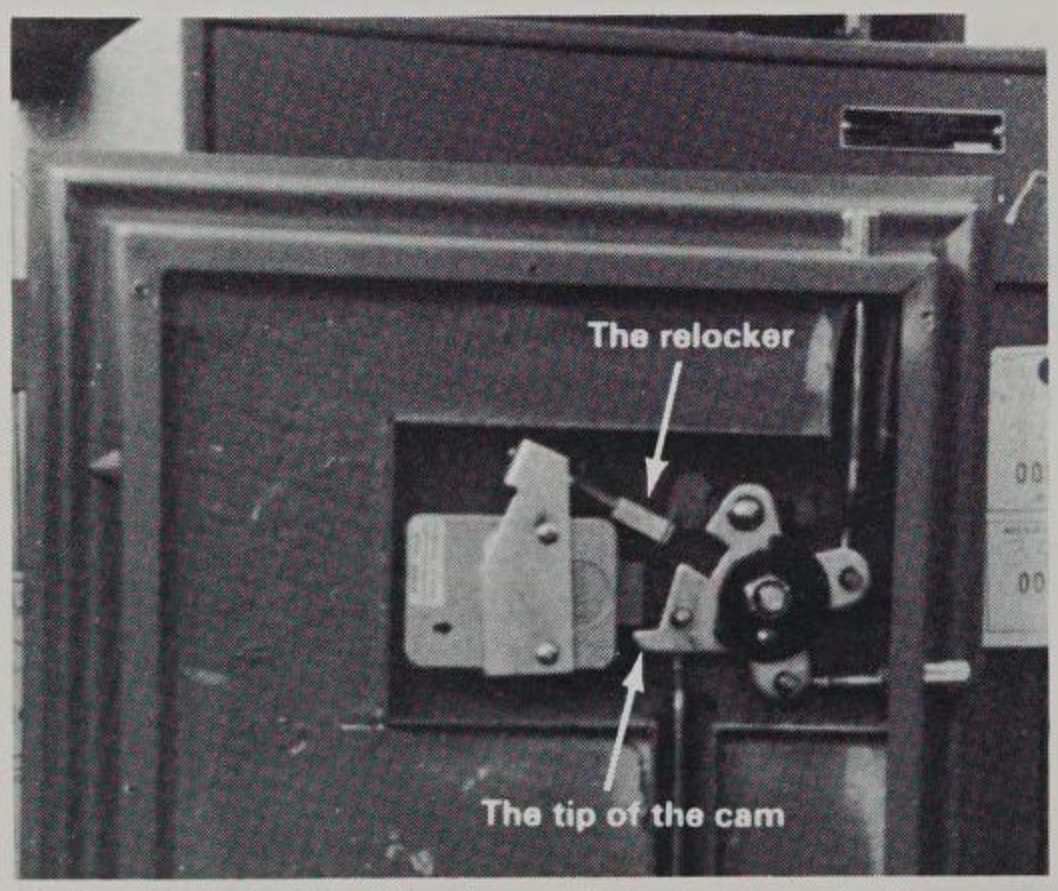
Starting off with the Major fire safe shown in photograph one, we discussed the three principle methods of attack: 1) drilling under the dial for the lock, 2) removing the shoulder from the handle and pushing it in to bypass the lockbolt, and 3) drilling and punching the cam to bypass the lockbolt.

1. Major fire safe to be opened.

There is no faster, feasible way to open this type of safe than by punching the cam. From the time the drill bit makes contact with the door to the time I throw the handle is usually under a minute. Everyone acknowledged the viability and repair ease of the other two methods, but voted unanimously in favor of punching the cam.

A former co-worker of mine, Paul Robinson of Allied Safe & Vault Co. Inc., volunteered to open the show. After giving him the measurements that I like to use on Major fire safes, which are 2¾″ left of dial center, and 5/8″ down, he center punched the door at this spot. He then drilled a ¼″ hole through the aluminum escutcheon plate, the outer door skin, the insulation and stopped at the hardplate. Paul then chucked in a ¼″×4″ Strong-Arm drill bit, switched the Hornet into high-speed (4,500 rpm) and with nothing more than body pressure drilled through the hardplate. Using proper back pressure, he stopped penetration before hitting any internal components.

2. Paul Robinson in action.



3. Here is the inside of the door with the back panel off exposing the lock, relocker and boltworks.

With his trusty penlight, he peered into the hole, jiggled the handle and informed us that he was right on the money. One by one, we all looked into the hole and agreed that it was indeed perfectly placed right at the tip of the cam, just below the lockbolt. Photograph two shows Paul in action with a ¼″ drift punch inserted into the hole and a two pound hammer on its way to impact. Two solid whacks later he threw the handle and opened the safe. Photograph three shows the inside of the door with the back panel off, exposing the lock, relocker and boltworks.

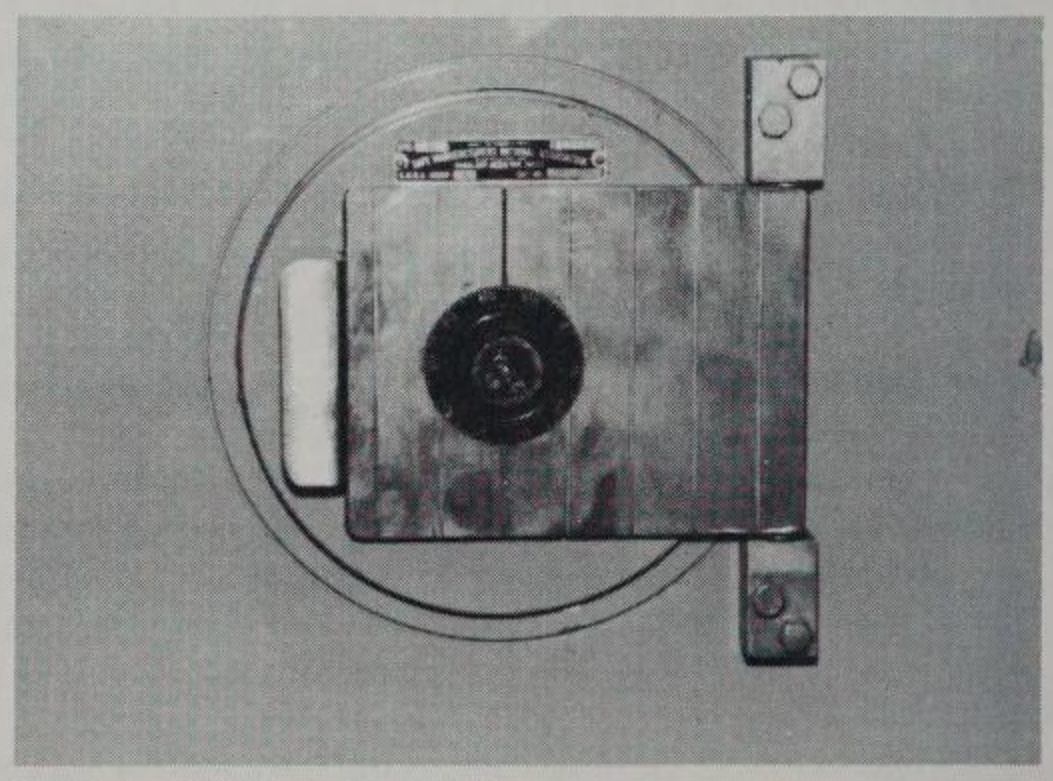
Of course, drilling for the cam leaves a hole to be repaired, but this is what tapered steel pins are for. I do not want to stir up a debate on the merits of tapered pins versus welding; I think they both have their place, but I do use tapered pins on safes with less than a TL-15 rating. On safes with a TL-15 or higher rating I do prefer welding, but I will explain the repair options to the customer and let him decide.

Any of you who have hunted, found and drilled through a tapered pin that I have installed in a TL rated container, (and you will have to hunt—I blend them into the door very well) will soon find a large ball bearing that was installed from the back. Go for it!

On a fire safe such as the Major, there are several options. You can weld the hole and replace the aluminum escutcheon plate. Or you can put a tapered pin in the door and replace the escutcheon plate. Or you can do what I do most of the time, which is to leave the escutcheon plate on, install the tapered pin and grind it off flush with the plate. Sand it smooth and install an aluminum decal over the area and attach it to the door with pop rivets. One of the companies for which I do openings, has these decals custom made with their name on them and holes pre-drilled for the rivets. They look and work great.

If you cannot use pop-rivets, Master padlock type rivets also work well. These aluminum decals are similar to U.L. labels in construction and should not be confused with ordinary stick-on type service stickers. I would not use service stickers for this as they are not durable enough and look tacky.

Next up was the Diebold T-hinged round door. (*See photograph 4.*) Easily identified by the large T-hinge that the door is mounted to, most of these safes came from the factory with either a Diebold or a Yale dial (¼″ spindle) and no dial ring. This last feature distinguishes this door from a very similar looking door that uses entirely different internal components and came stock with a S&G dial (5/16″ spindle) and dial ring. There were very few of these safes made and they will be discussed in a future article.



4. Diebold T-hinged round door.

The more popular model, which we are dealing with here, is an E-rate tribolt door with spring loaded locking bolts at the 9, 1 and 5 o'clock positions. These bolts act as relockers if they become disengaged from the bolt cam. This usually only happens if the spindle is punched. Using the Sargent & Greenleaf 6660 rotary combination lock, the large 1¾″ diameter driver is in front, and the three small 1⅜″ diameter wheels are mounted on the back cover.

It is for this reason that I do not suggest drilling into the lock to read the wheels. Technically speaking, it can be done by drilling a small very precise hole and using a borescope with an

O.D. of 3/16″ or less to insert into the hole and through one of the bolt travel slots in the cam and viewing the wheels. But this is a risky proposition and is not necessary.

To open this safe I strongly recommend setting off the relockers. Pull the dial, remove the T-hinge from the door and swing it out of the way. Take a deep breath and punch the spindle. This knocks the back cover off, the driver and spindle follow close behind, and the spring loaded bolts automatically go into relock mode.

We then drill a hole (I use a ⅜″) at the 9 o'clock position, 2½″ out from dial center, down to the bolt which is approximately 1½″ deep. Repeat the process at the 1 o'clock position and pry both bolts back. The taper of this door is such that only two of the three locking bolts need to be retracted to open the safe. Watch your toes!

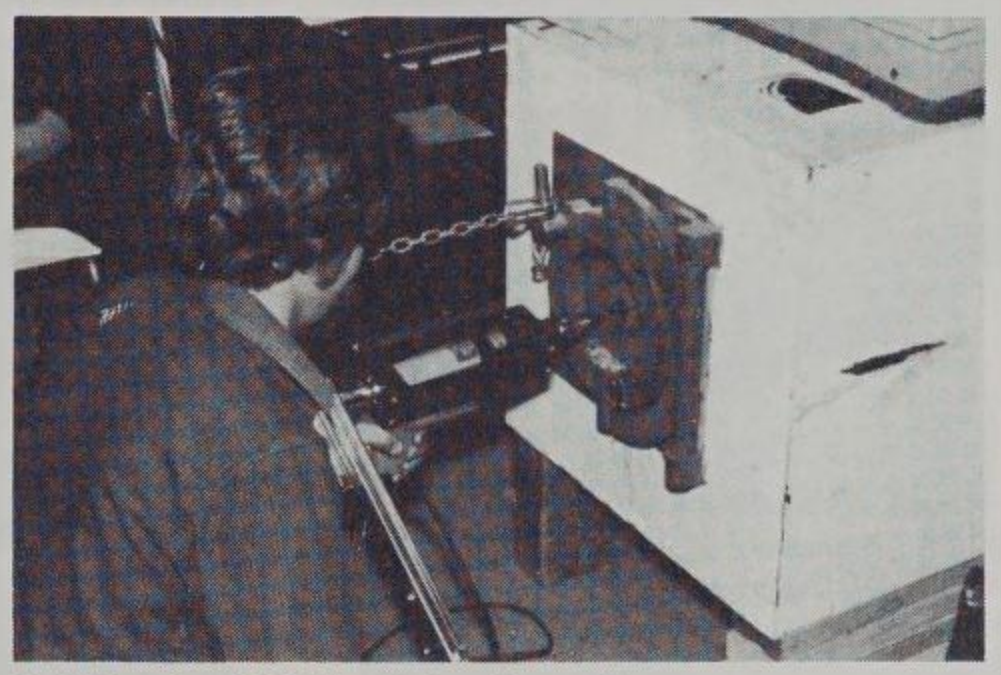
5. Russ Stump is looking into the 1 o'clock hole to examine the bolt.

Russ Stump of B&H Safe & Lock offered to attack this one. He removed the dial and hinge, punched the spindle and drilled his holes at the appropriate locations. Photograph five shows Russ looking into the 1 o'clock hole and examining the bolt. Incidentally, one of the locking bolts had been removed, and the door came open after Russ had just pried one bolt back! Photograph six shows the inside of the door with the back cover removed exposing the lever, driver, cam, and locking bolts.

Some safemen like to drill 2″ or 2¼″ out from dial center to pull the springs first. This makes prying the bolts back a lot easier since there is no spring pressure to contend with. Either method works. Take your pick or try them bolt.

Diebold also made a C rate liftout version of this door. The only important difference is the location of the bolts. On the liftout door the bolts are at the 12, 4 and 8 o'clock positions. I open them the same way, however, you may find it easier to pull the springs, because all three bolts have to be retracted to open the door.

Now we are ready to tackle the Herring-Hall-Marvin shown in photograph seven. This is a lug door safe, one of many different types that were built by HHM, but is easily distinguished from the rest by the unique hinge assembly. It is one of four different safes made by HHM of which I am aware that use a 70 number dial. Further, it is one of the only two models of which I am aware that use this particular type of lock. The other model is a tri-bolt non-lug door. The safe at hand, however, is a single bolt model with the locking bolt on the hinge side at the 3 o'clock position. The drop-in position is 19 (with the dial set on 70).



7. A Herring-Hall-Marvin lug door safe.

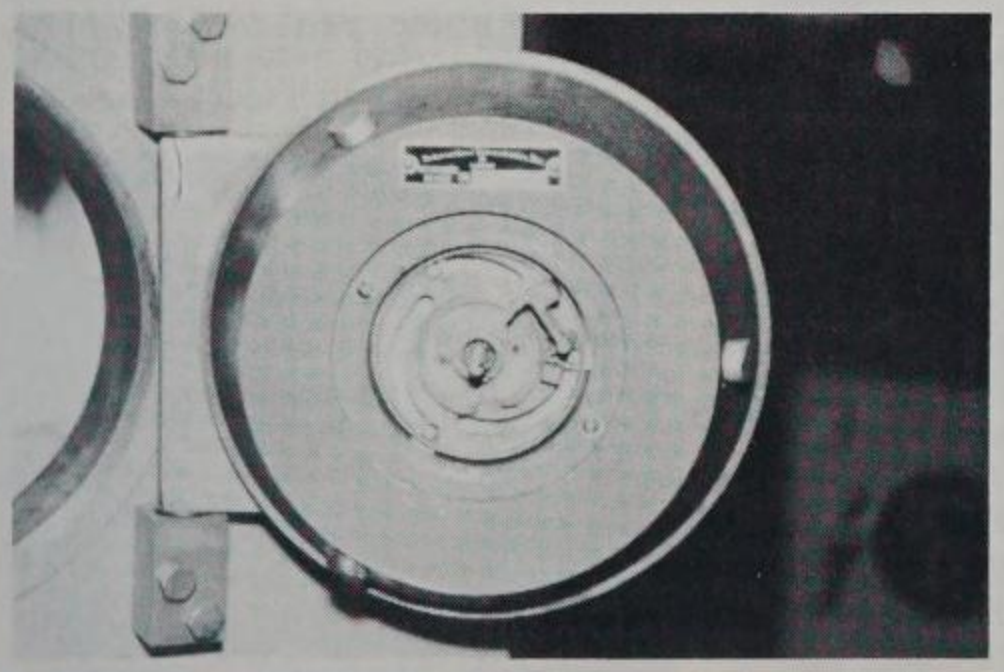
After examining pictures I had of an identical safe, we correctly concluded that we did not want to drill at the drop-in position. The driver being in front, coupled with the fact that the roller fence is geared, was enough to persuade us to drill elsewhere.

Dan Davis of D.R. Davis Safe & Lock got the honors on this one. The dial has a screw in the center of it which holds it on to the spindle. He removed the screw, pulled the dial off and center punched the door at our deduced drill point, which was 38 × 1 1/16″ out from dial center.

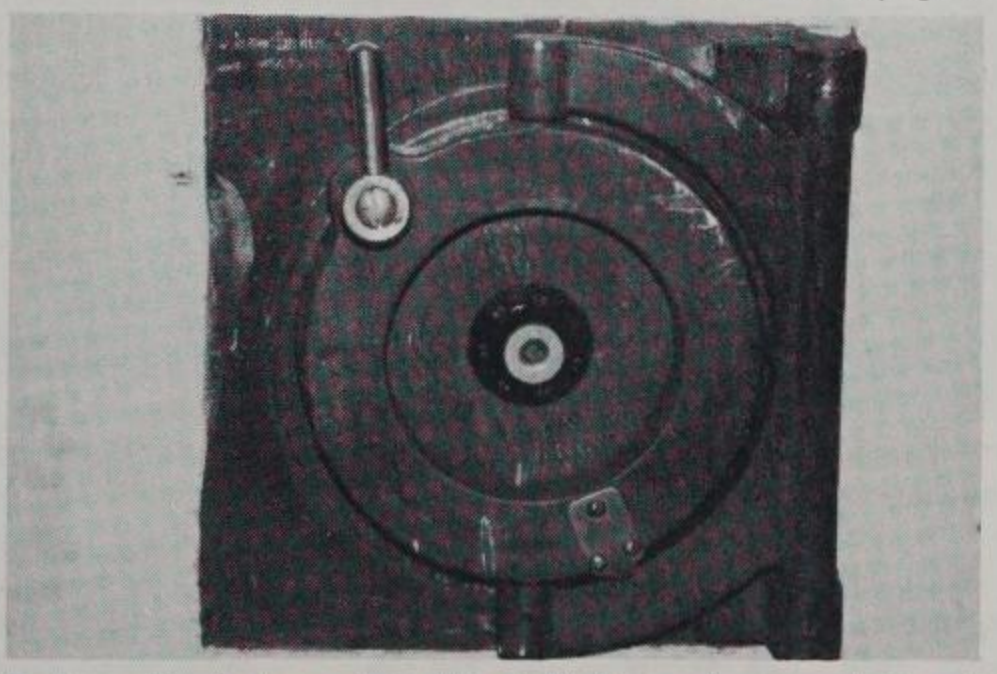
Dan chucked in a ¼″ high-speed bit and penetrated the mild steel down to the hard plate. He then chucked in ¼×4 Strong-Arm bit and switched the Hornet into high-speed. Photograph eight shows Dan leaning into his drill rig as he penetrated the hardplate.

Using back pressure, Dan had penetrated the hardplate and just grazed the driver. Through the hole we were just barely able

Continued on page 74



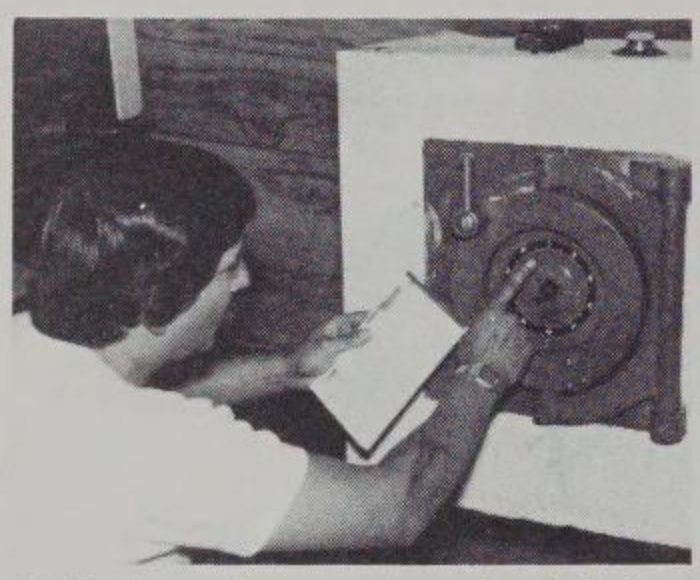
6. Shown is the inside of the door with the back cover removed exposing the lever, driver, cam and locking bolts.



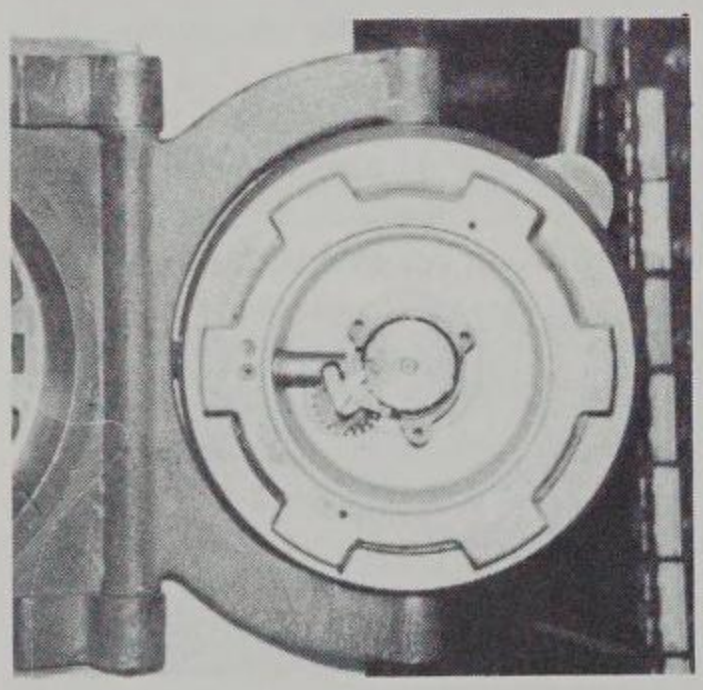
8. Dan Davis leans into his drill rig as he penetrates the hardplate.

to see all the wheels over the driver. Now it was time to transfer our numbers to the drop-in area. There are many ways of doing this, but my favorite is using the Dib's magnetic ring and dial pointer. When this tool came on the market eight or ten years ago, I very gently laid to rest the small 100 number dial off an old S&G padlock that I had used for years to transfer numbers.

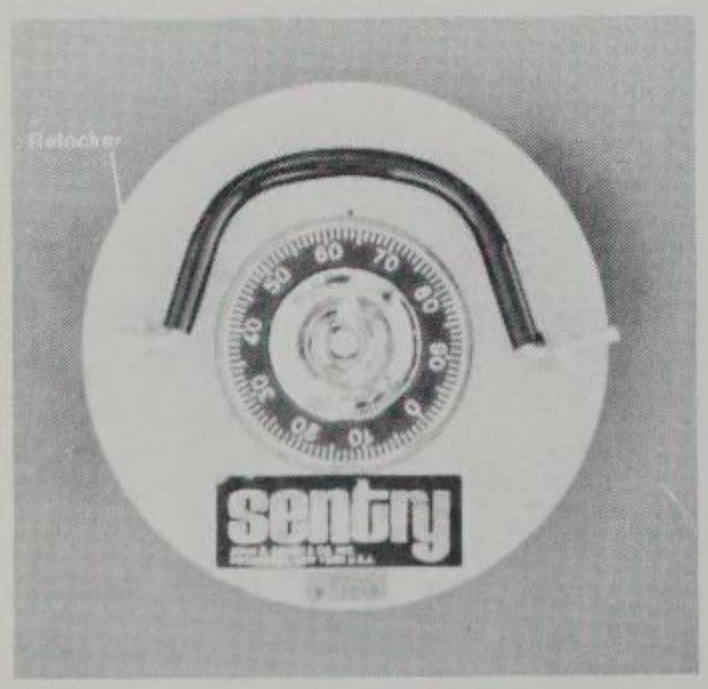
Several of the guys took turns transferring numbers, and photograph nine shows Paul Robinson using the Dib's tool, shortly before he got the safe open.



9. Paul transfers numbers shortly before the safe was opened.



10. This is the inside of the lug door.



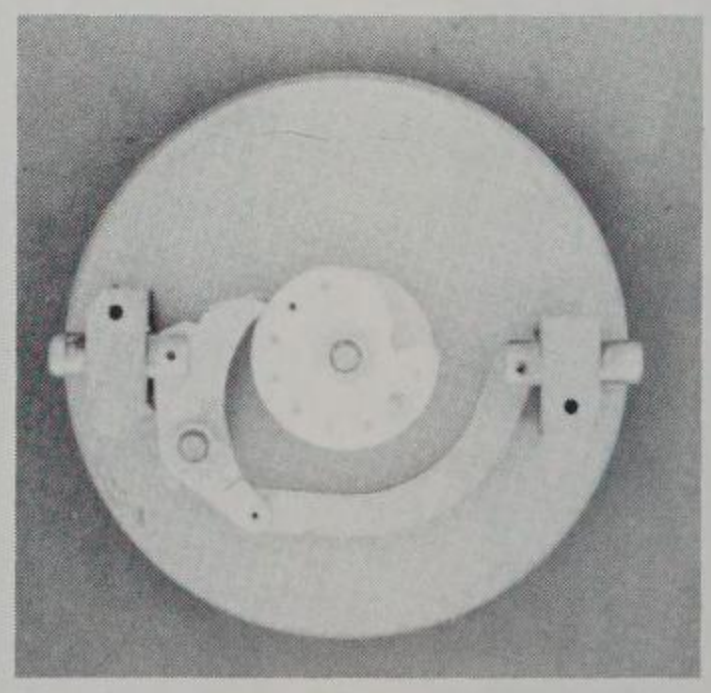
11. An old style Sentry round door after the dial insert was removed.

Photograph ten shows the inside of the lug door. Observe the locking bolt on the hinge side. The arrow points to the relocker. This type of relocker is pretty much standard for HHM lug doors, the only real variation is that the larger lug doors have the relocker located on the lower side of the bolt.

Our next candidate for surgery was the old style Sentry round door shown in photograph 11. (This picture was taken after the dial insert was removed.)

Ken Blanchard of Davis Lock & Safe drew the short straw on this one. Following my instructions, he pried out the black aluminum insert from the center of the dial, and removed the screw that holds the dial on to the spindle. After pulling the dial off, he center punched his drill point at 16×1″ out from the dial center. This drill point is also the drop-in point. Chucking in a 3/16″ high-speed bit, and making sure the Hornet was set on low-speed (1500 rpm), photograph 12 shows Ken drilling his picture perfect hole through the door (no hardplate) right at the drop-in point. Lifting up on the spindle, he clamped a small pair of vise-grips on the spindle right where it goes into the door. Using his otoscope to look into the small hole, Ken lined up the wheel gates under the fence and the safe was open.

12. Ken Blanchard drills through the door right at the drop-in point.

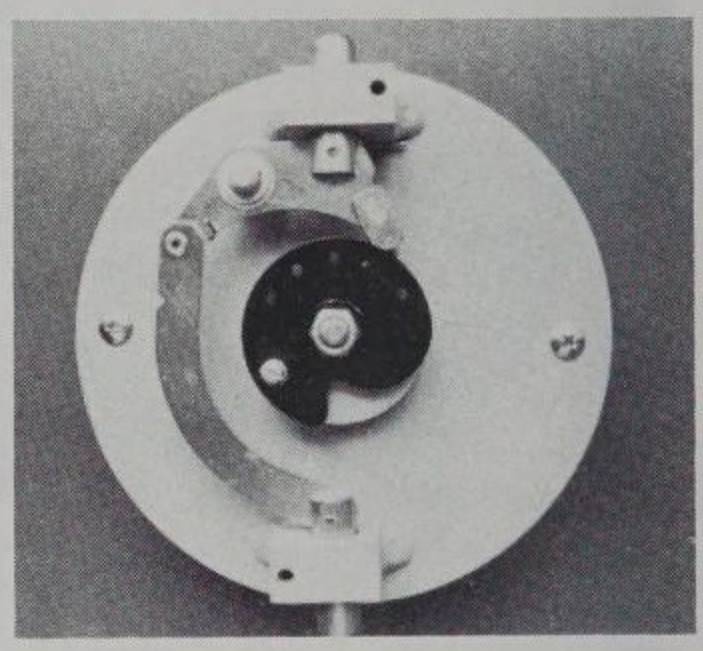


13. Here is the inside of this door with bolts at 3 and 9 o'clock.

Photograph 13 shows the inside of this old style round door. This is a dual-bolt door with bolts at 3 and 9 o'clock. The drop-in position is 16.

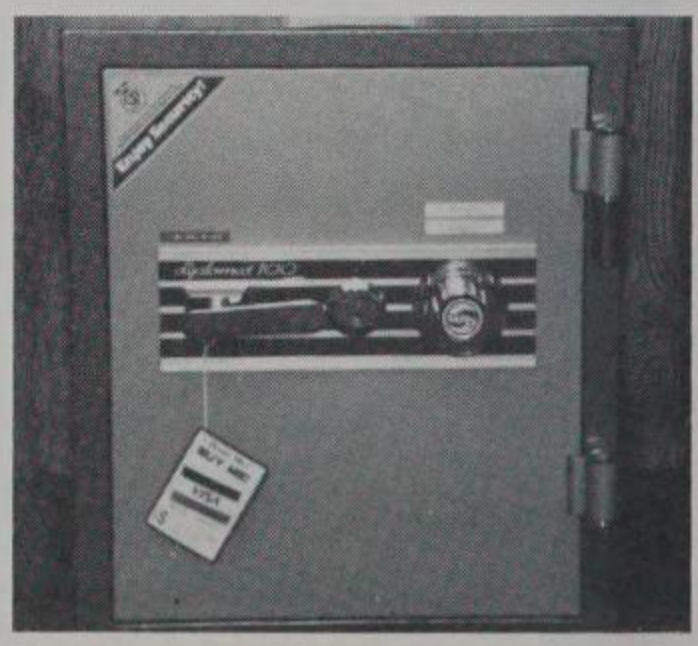
Sentry has made a few changes in these doors. Photograph 14 is a front view of a new style door. The dial is black with a blue insert, and comes with black plastic handle bracket covers. Photograph 15 shows the inside of the door with the back plate removed. This is a dual-bolt door with bolts at 12 and 6 o'clock. The drop-in position is 91.

14. This is a new style Sentry door. The dial is black with a blue insert.



15. The inside of the door with the back plate removed. It is a dual bolt door with bolts at 12 and 6 o'clock.

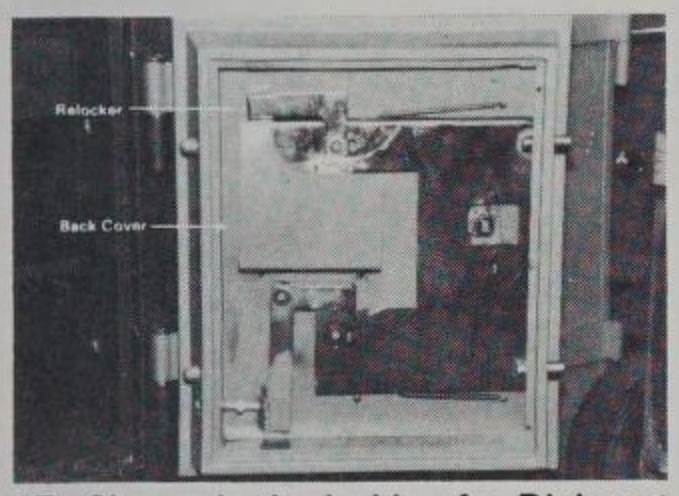
The last of our safes to be opened this day was an imported Diplomat fire safe, similar to the one in photograph 16. Diplomat makes a number of models; the one we had to open was a 100 series safe with a handle, keylock and non-S&G dial. The story on this one was that an inexperienced person had taken the entire inner mechanism apart, and shut the door with the parts only partially assembled.



16. Diplomat fire safe (imported).

Neal volunteered to do this one, as he had been sitting quietly all day, and now had the itch to drill. We discussed several possible avenues of attack, and decided we wanted to find out if these imported dials could be pulled. Well, we found out that they certainly can; but as soon as Neal had removed the dial, the spindle disappeared into the safe and we heard a clank as the spindle and other unknown parts hit the bottom of the safe. This meant that the back cover had not been reinstalled and that the relocker was set off.

Photograph 17 shows the inside of a Diplomat 100 with the back cover in

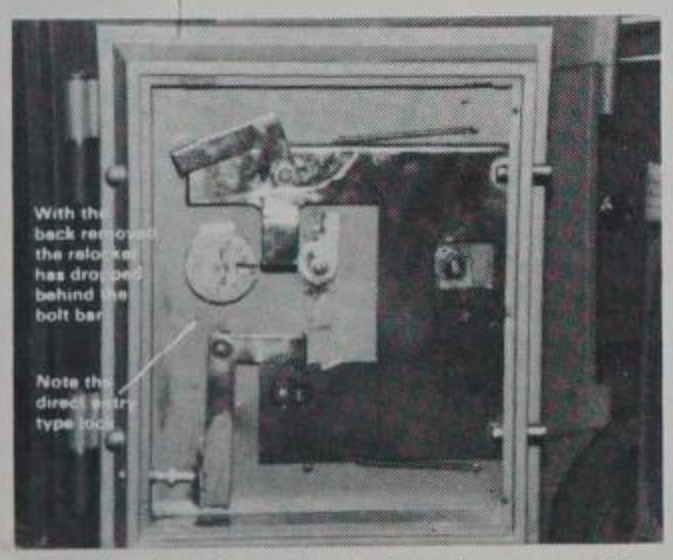


17. Shown is the inside of a Diplomat 100 with the back cover in place, holding the relocker up and off the bolt bar.

place, holding the relocker up and off the bolt bar.

Photograph 18 shows the inside with the back cover off, exposing the direct entry type lock. The relocker has fallen down behind the bolt bar and is preventing the bolts from being retracted. (The post that the relocker is mounted on goes through a slot in the bolt bar and is attached to the door. The relocker and the bolt bar are not connected to each other, as it may appear in the picture.)

After examining these pictures, we theorized that since the relocker was a gravity drop type, we could turn the safe upside down, the relocker would fall out of the way and we could open the safe. Had the relocker been this type, this trick would have worked. But as you have probably guessed, it was not this type and the trick did not work. Neal even bounced the safe on its head, theorizing that a spring might have been added to the relocker to hold it in place.

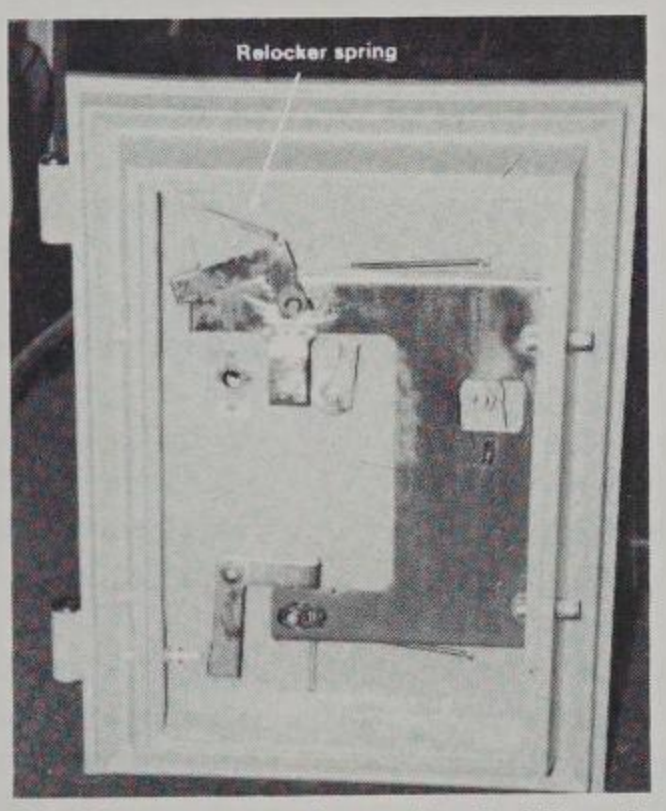


18. The inside with the back cover off.

All this was to no avail, and in photograph 19, Neal has laid the safe on its back and is drilling through the aluminum escutcheon plate up at a sharp angle in the direction of the relocker. As it turned out, Neal's hunch about a spring being added to the relocker was right. Photograph 20 shows the inside of this safe. You can clearly see the spring that is holding the relocker firmly in place.

I have since seen even another type of relocker on the 100 series safes with the direct entry type lock. It is a round spring loaded bolt that blocks the bolt bar if the back cover is off, and is located in the same general area as the other relocker.

19. Neal has laid the safe on its back to drill.

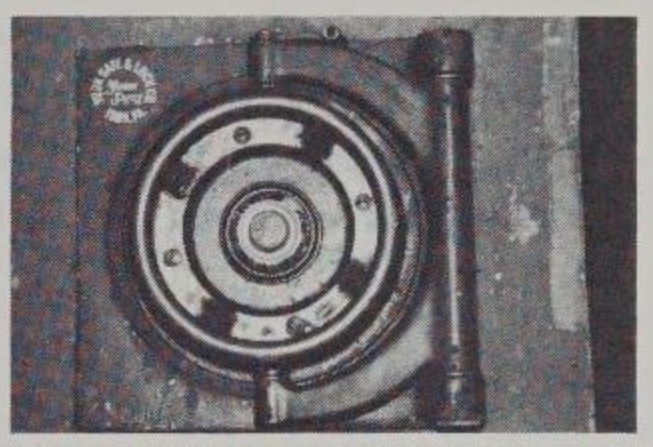


20. You can see the spring holding the relocker in place.

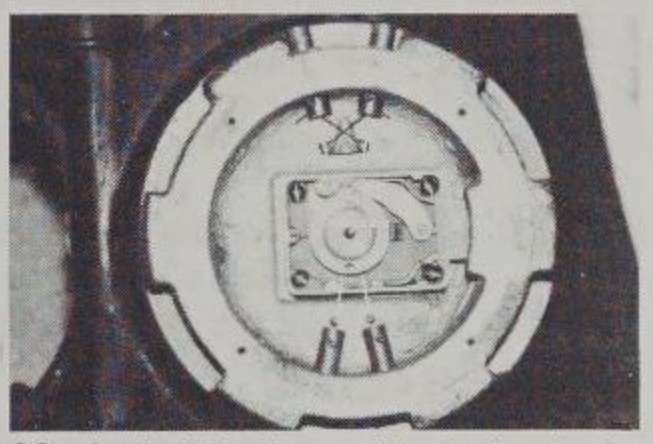
These safes are also available with S&G 6700 series combination locks. All of these I have seen have the lock mounted VU, and the relocker is a round, spring loaded bolt mounted vertically between the dial and handle. The dial will tell you which type of lock it has.

Photograph 21 is a front view of the York lug door that I manipulated. York's trademark on their lug doors was the chrome plated "steering wheel" used to rotate the door. Several other manufacturers, such as Mosler and Guardian have used similar designs, but York initiated the use of the "steering wheel," and almost every lug door of theirs that you see will have one. If the York name is not written on the safe, you can still distinguish it from the others by the unique hinge assembly.

If you are going to drill one you should know that the dial is removable. Unscrew the round cover piece with "York" embossed on it from the center of the dial.



21. A front view of the lock lug door manipulated by the author.



22. An inside view with the back plate and back cover both removed.

This will usually expose a screw. Remove the screw and the dial will come off. If there is no screw, there is a threaded hub that can be removed.

Photograph 22 is an inside view of the door with the back plate and back cover both removed. Although York did make these doors with a few internal variations, this was and is the most common configuration. This is a single bolt door, with the locking bolt at 9 o'clock. The lock is a large bronze case Yale #2421Y mounted RH. There are three 2″ diameter wheels, and as you can see, the driver is in back.

The drop-in position on this lock is about 98, and it is safe to drill at this point. The hard plate that I have encountered is pretty tough stuff. I would recommend manipulation if possible. If not, have a supply of good drill bits on hand; you will need them.

That about wrapped up a very busy day. I hope you have enjoyed attending this seminar with us through this article. ■

A couple of drill point improvements: after punching the spindle on a Diebold T-hinged round door, try to rotate the door before drilling for the locking bolts. If the door will rotate, there is a good chance the locking bolts will fall out in the corner of the body and the door will fall off in your hands. On a safe with a functional lock, I do not recommend punching the lock due to the damage it can cause and the difficulty of repair. Drill a scope and transfer hole at 35 x 1-1/4". This will bring you right through a slot in the bolt cam — a great place from which to scope the lock.

Knob Knockers Strike Again!

"Upon entering his business one morning, the local restaurant owner found his safe looking like it was used in the demolition derby as a car fender."

The author writes a regular safe column for *The National Locksmith*. He has also written a book called *The National Locksmith Guide to* SAFE OPENING. The book is available through this magazine.

by Dave McOmie

Let's face it, if there were no burglars, and no threat of burglary, many of us would be hard pressed to stay in business. There would be no deadbolts or alarms to install, no safes to sell, and certainly there would be no burglarized safes to open and repair. It is this last category that would affect me personally, and there are times I guess, when I am somewhat thankful that ours is a less than perfect world. After all, in a perfect world would there be enough productive jobs to go around?

In our modern republic, misfortunes are quite commonplace. One of these was experienced by a local restaurateur down the road from me. Upon entering the business one morning, he found his safe looking like it had been used as a car bumper in a demolition derby. A couple of very amateurish burglars had broken in, went upstairs to the office and worked the safe over.

The first thing they did was break the dial off and punch the spindle into the safe. Brilliant. Typical Knob Knocker mentality. Then they took a hammer and beat the heck out of the door, darn near fusing it to the body.

Needless to say, these crude methods did not open the safe. Then, probably out of frustration, our amateurs proceeded to push, pull and drag the safe (cladding and all) over to the stairs and with a heave-ho they pushed it over the edge.

1. Gary E-70 safe.

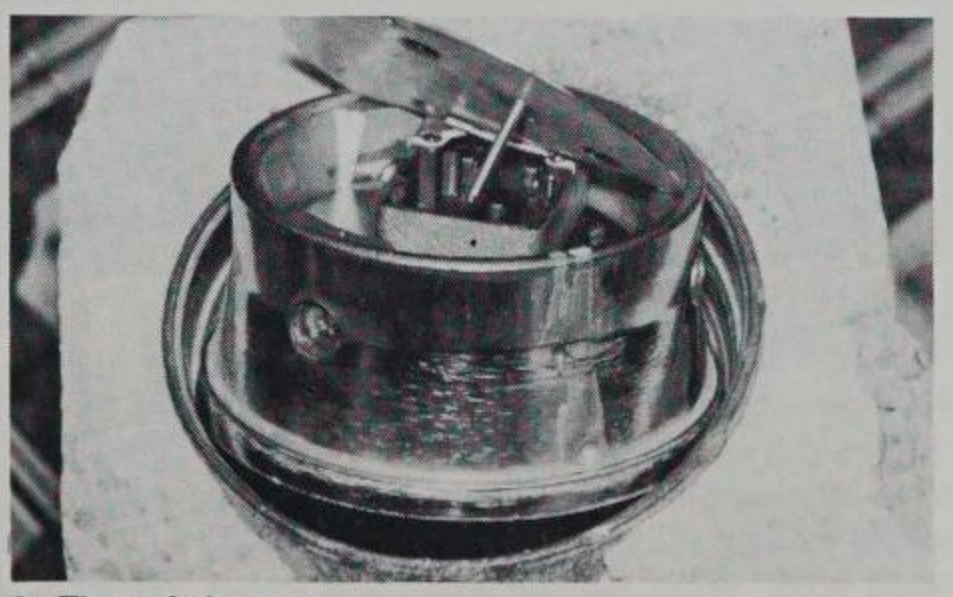
When I arrived later that same morning the safe had been carried back upstairs, thankfully not by me. Photograph one shows the safe as it appeared then. What kind is it? A Gary E-70, commonly referred to by safemen as a Gary "roller bolt" door, due to the fact that it uses the S & G #6760 lock. This is a 7½" tribolt liftout door with a nickel-jiggered finish, that is not case-hardened.

The V and H 70 series doors are very similar and will also be discussed later in the article.

With a relocker or two set off, the E70 can be difficult to open. The drop-in point and relocker are both randomly located and can be tricky to locate. Fortunately for me, the cladding on this one was broken up pretty bad, so I was able to drill through the side and punch the bolts back. They are at a depth of 2¼" from the face of the door, and you can usually punch all of them through one ⅜" hole in the body, depending on how far you can rotate the door. This was the hard part for me in this particular case. The amateurs had hammered on the door, wedging it into the body, and it would not budge. Not even a micron. With the help of a little trick that I use from time to time, I was able to persuade the door to rotate.

First of all I sprayed Tri-flow all around the edge of the door. Then I removed the handle and handle brackets. With a ⅜" high-speed bit, I drilled in between two handle bracket mounting screws down to a depth of about ½". (This makes repair a cinch.) Next I inserted my favorite punch, which by the way, is a blunt end marlin spike, into the hole. Then I layed it as parallel (not perpendicular) to the door as I could, with the tip of the punch against the upper edge of the hole, and began punching. After reversing direction a couple of times, the door began to rotate. Then it was a simple matter of lining the bolts up one by one through the hole in the safe body and punching them back. They go back kind of hard but with a big enough hammer, they will go back.

Photograph two shows the door after I opened it. Note the back plate. The spindle was punched very hard to bend it like that.

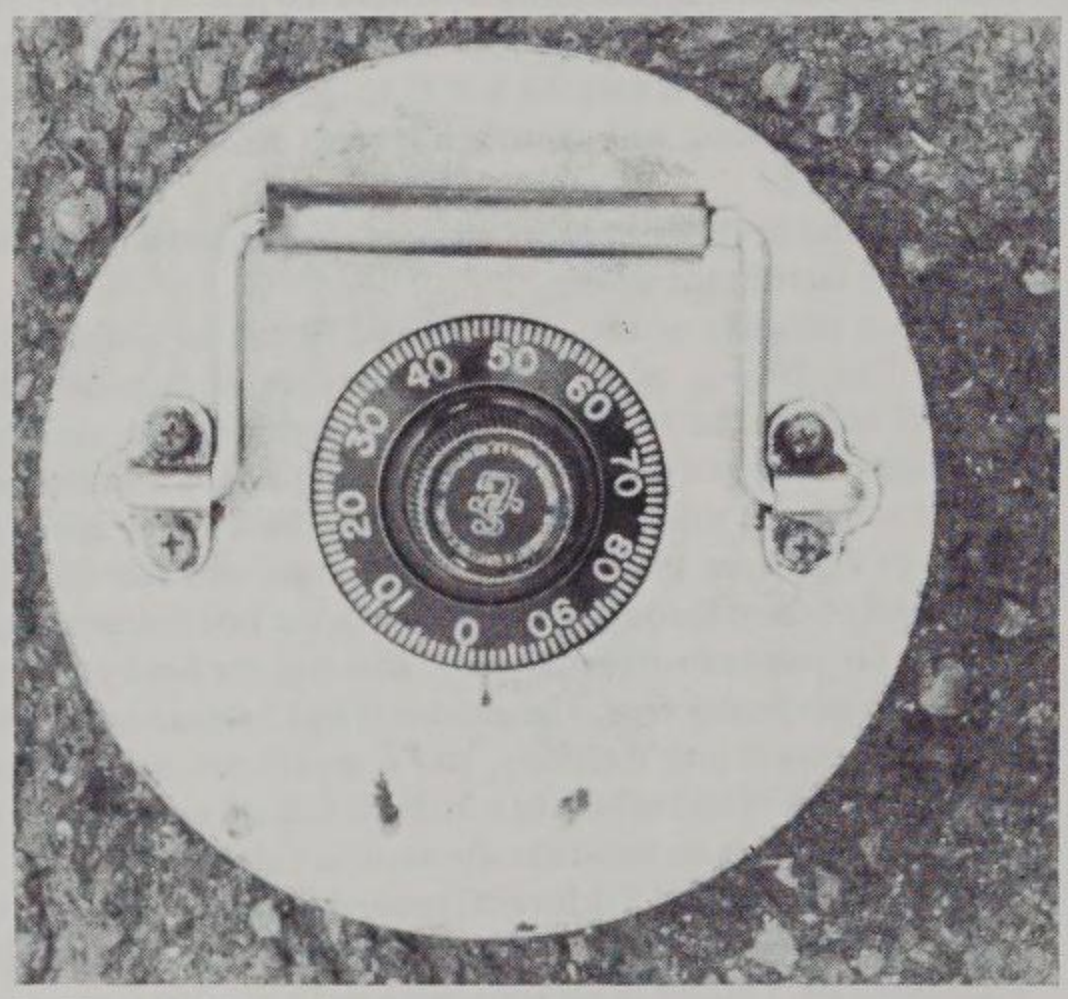


2. The safe is open.

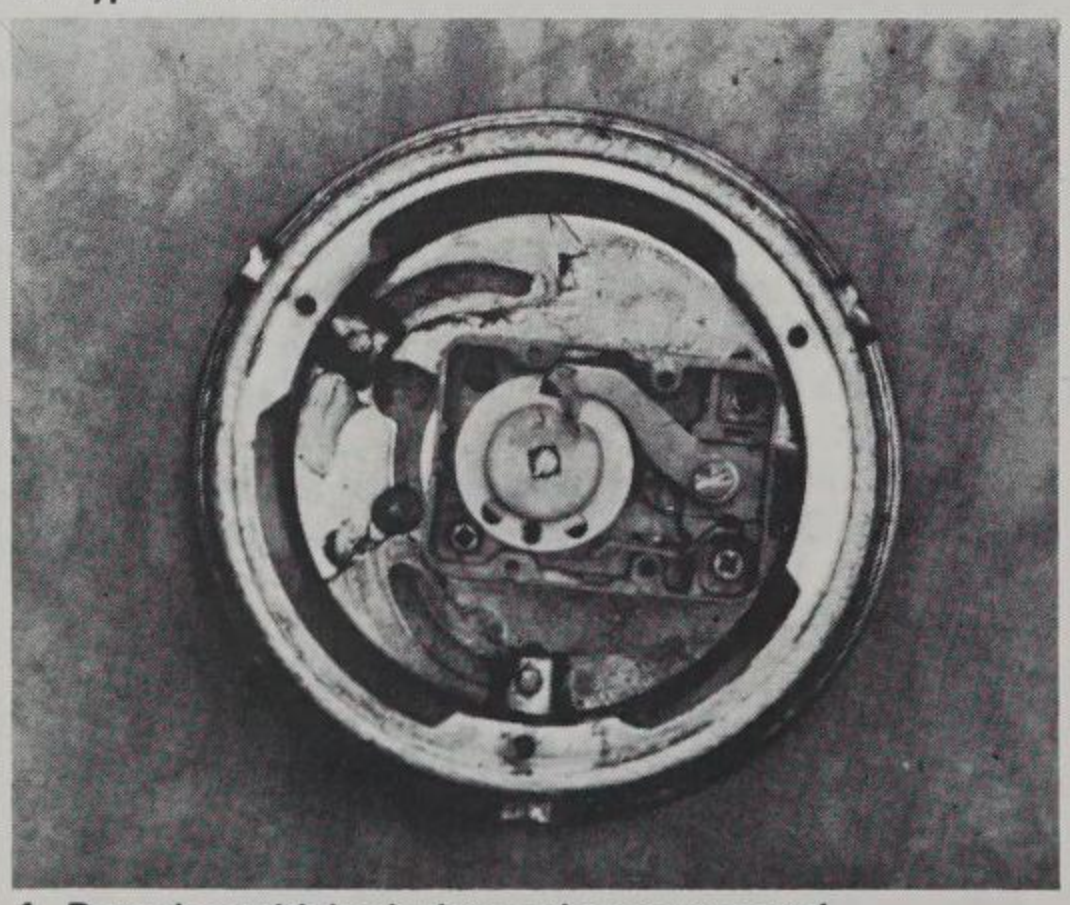
I have given the customer two repair quotes. The first and least expensive is to repair his door, which needs a new dial, cam plate, three bolts and bolt pins, and an S & G #6760 lock. The second and slightly higher price is for a replacement door. Gary manufactures a replacement door for the obsolete E70. The replacement doors, like all new style Gary round doors, are very well built and suffer none of the problems that were inherent in the roller bolt design. I am hoping the customer will work it out with his insurance company and opt for the new door. I am replacing as many of the problem riddled old style doors as I can, and urge you to do the same.

While we are on the subject, let's talk briefly about the roller bolt doors; their construction and related problems.

Photograph three shows a typical E70 as you may encounter in the field. The Gary nameplate is missing. This is a common occurrence on these doors. Note the rubber handle grip.



3. Typical E70 safe.



4. Rear view with back plate and cover removed.

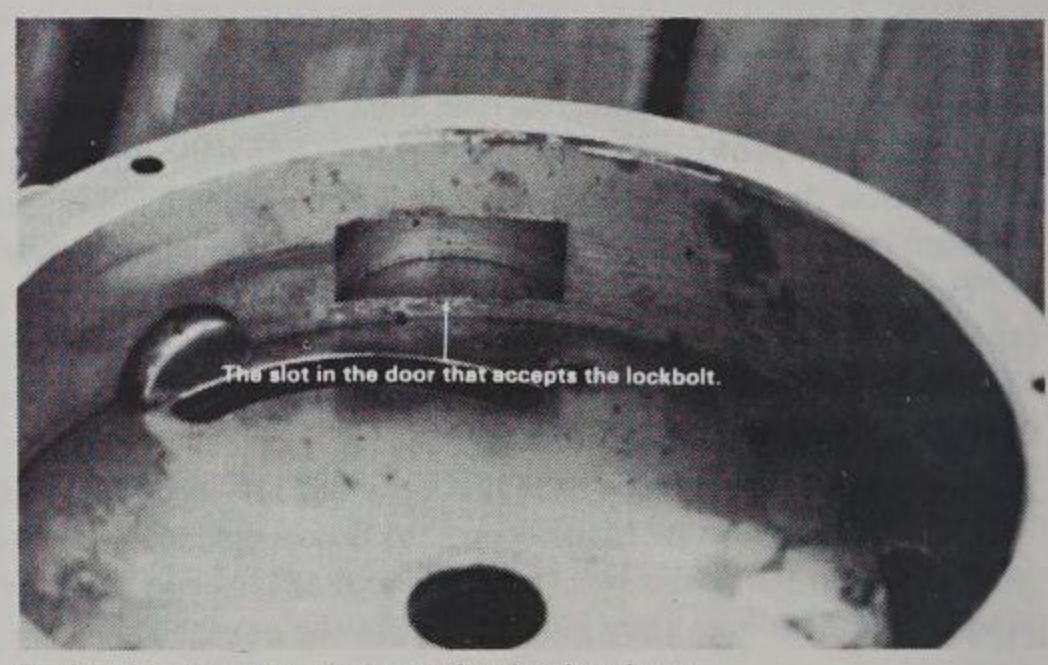
Photograph four is a rear view with both the back plate and back cover removed. Observe the lock, which in this case is mounted very nearly right hand. The roller type lockbolt is in the locked position, extending into a cut out in the door, which prevents the lock and cam plate from rotating and retracting the locking bolts. When the combination is dialed, the lockbolt retracts from the cut out; in this position the lock and cam plate are free to turn and retract the locking bolts. Photograph five shows the cut out in the door into which the lockbolt extends.

I should clarify my use of the words "lockbolt" and "locking bolt." Many a discussion between safemen has resulted in a confusion resulting from the word "bolt" being used to denote too many different things. When I say lockbolt, I am referring to the brass bolt that extends out of the lock case itself. In our sample safe, the lockbolt is the roller type bolt that extends into the cut out. When I say locking bolt, or locking bolts, I am referring to the bolt or bolts that extend out from the safe door into the body, that prevent the door from being opened. In our sample safe, these are the three round bolts sticking out from the door. Next month I am going to attempt to clarify a number of similarly confusing terms such as roller fence, roller bolt, geared roller fence, lever fence; and I am going to take issue with the terms "active" and "passive" relocker.

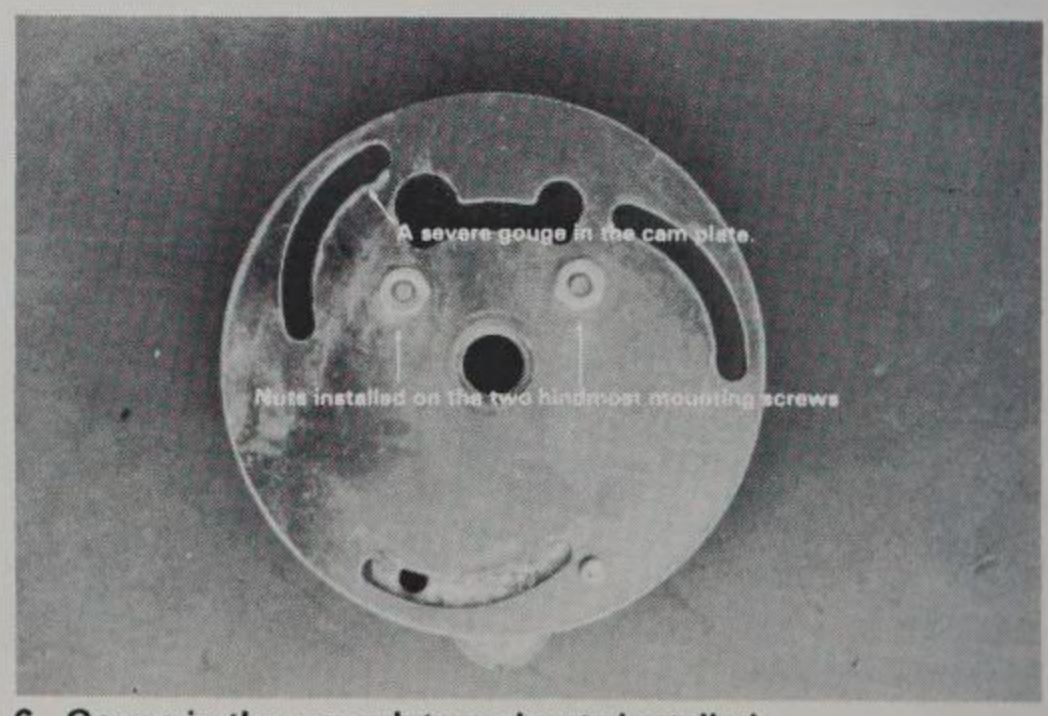
Okay, let's get back to the roller bolt doors. Although the E door is the most problem prone on the whole, liftout doors receive more abuse than do hinged doors. All three doors (E, H, and V) do experience occasional problems that are usually traceable to three things.

1) Nicks or gauges in the cam plate where the bolt pins travel. (*See photograph 6.*) This causes the dial to stick or catch when retracting or throwing the bolts. Solution: Replace the cam plate. Do not attempt to repair a bad cam plate.

2) Lock mounted screws loosening or backing out. This can be a nasty problem. Solution: Install nuts on the rear two mounting screws. (*See photograph 6.*) Also, use Loktite or nail polish on mounting screw number three. Mounting hold number four must, of course remain empty. A mounting screw here would interfere with the travel of one of the locking bolts.



5. Lockbolt extends into slot in the door.



6. Gouge in the cam plate and nuts installed.

3) The lock post breaking away from the lock case. (*See photograph 7.*) Solution: Replace the lock. The 6760 is obsolete and currently unavailable, but you can convert a 6735 to a 6760 in about two minutes. Remove the tube from the 6735, by carefully twisting it off. Swap lockbolts with the broken 6760. Take the brass brushing from around the tube horn of the bad lock and install it on the 6735. Oops. I should not call it a 6735 anymore. You now have a 6760!

7. Lock post breaks away from the lock case.

Technically, the drop-in positions on the E70 doors are randomly located, and you will find them with the locks mounted every which way. But, I have found that a disproportionate percentage of these doors have the locks mounted within a few numbers one way or the other of right hand. A lock mounted right hand has the lockbolt pointing at 75 (the 9 o'clock position). The one pictured is mounted at approximately 74, which puts the drop-in position at 97. This just happens to be where I always put my first hole in an E70. I start off at 97 × 1″. If it happens to be one of those doors with the right hand mounted lock, all you need to do is line up the gates under the fence and open the safe. If not, then the numbers have to be transferred around to the drop-in point. No big problem (usually)!

The trouble begins when one or both relockers are set off. An E70 in this condition can be a real bear to open. Whenever possible, I will violate my protocol and drill through the cladding and/or the concrete to side punch the bolts. If this is not feasible, or if you have an aversion to doing this, prepare yourself for a real workout.

Sometimes you can get lucky. If the safe has been spindled (punched), try using Norm Schamp's tools, the HPC NST-6. Many of these safes have had the external relocker removed. Provided all the internal components are free and not bound up, the lock and internal relocker can be compromised through the spindle hole. A borescope that will look back at you (the fancy term for this escapes me momentarily), is particularly useful on these doors, as it allows you to map out the interior through the spindle hole.

If you have a spindled E70 to open, and if you do not have these excellent tools, I suggest you ask Santa for them. In the meantime, however, the safe needs to be opened so proceed as follows. Put a ¼″ hole in the door at 97 x 1″. With a little luck you will be able to see part of the lever or even the fence. Probe the wheels around and let it drop-in. If you cannot see the lever or the fence, then you need to figure out just where in the heck you are. Using a sample lock like the one in the safe, you can usually determine where your hole is in relation to the drop-in point by examining very closely everything that is visible through the hole. Observe the part of the back cover that can be seen. Note the curvature of the lock case, if you can see it. Compare these and any other characteristics that you may notice to those of the sample lock. With a little patience you should be able to correctly deduce the drop-in point.

After locating and drilling at the fence, line up the gates and let it drop in. Now try to probe it back to retract the lockbolt. If the lever will not come back, then the internal relocker is set off. A simple formula that I use when deducing an internal relocker drill point for a 6700 series lock is to add 62 to the drop-in point. Then drill at that number × 1-1/16″ out from dial center. For example, if the drop-in position is 23, we add 62 to 23 which makes the internal relocker drill point 85 × 1-1/16″. The safe pictured has the drop-in point at 97, so the internal relocker drill point is correspondingly 59 × 1-1/16″. Of course, all this complicated algebra can be avoided altogether by using a template. There are excellent templates available for various safelocks on the market.

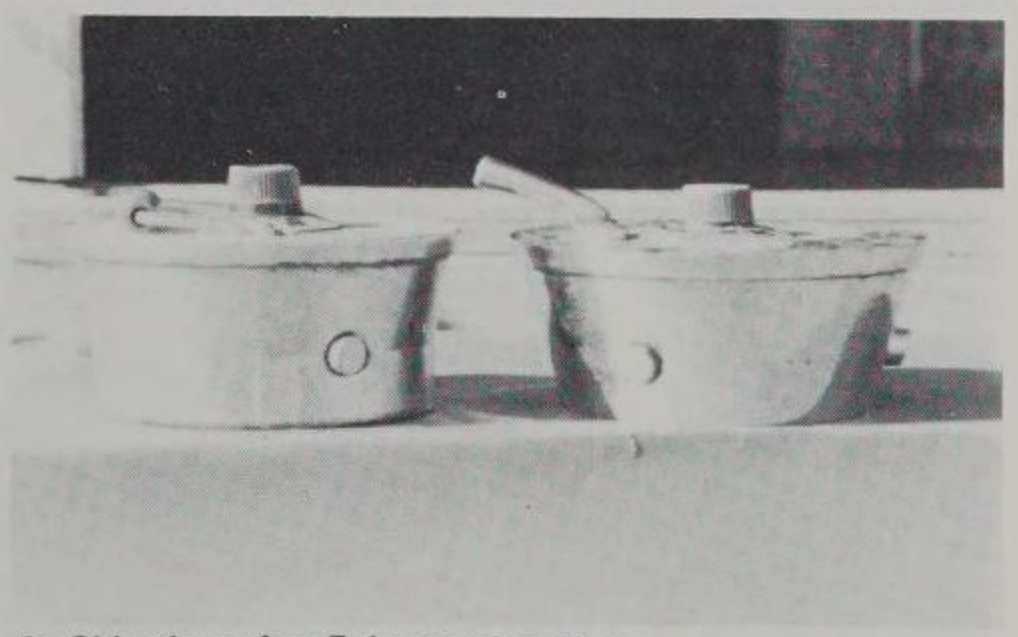
After this hole is drilled, use a wire to hook the relocker and pull it back. Tie the wire off somewhere to the safe, or clamp vise grips on it right at the hole, making sure the relocker is held back. Now you have neutralized the internal relocker and have both hands free.

You should now be able to retract the lockbolt. Once it is retracted, try to probe the whole lock in a clockwise direction to retract the three locking bolts. If it will not go, it is reasonable to assume that the external relocker has not been removed, but is in place and functioning. At this point you are allowed under section 3, article 4 in the unwritten code of ethics for safemen, to utter the expletive of your choice. Under your breath, of course. Right about now, you will wish you had side-punched the safe. We need to put yet another hole in the door.

The external relocker drill point I use on Gary roller bolt doors is drop-in point + 34 × 1⅝″. The safe pictured drops in at 97, therefore the external relocker drill point is 31 × 1⅝″.

I do not pussyfoot around with these relockers. I go straight in and drill out the relocker post which immediately renders it ineffective. The only exception is when I have accidentally missed the post and have drilled right along side it. In this case I will either try to hook the relocker and pull it back, or I will punch it right through the cam plate, depending on my mood. When you finally get the darned thing open, believe me it is Miller time.

The V and H 70 series doors are 8″ hinged tribolt doors. With the exception of the locking bolts, these doors use the same parts as the E70. A side view of an E door and an H door is shown in photograph eight. The E door is on the left, and you can see the difference in the taper of the two doors. Their respective locking bolts have correspondingly different tapers.



8. Side view of an E door and an H door.

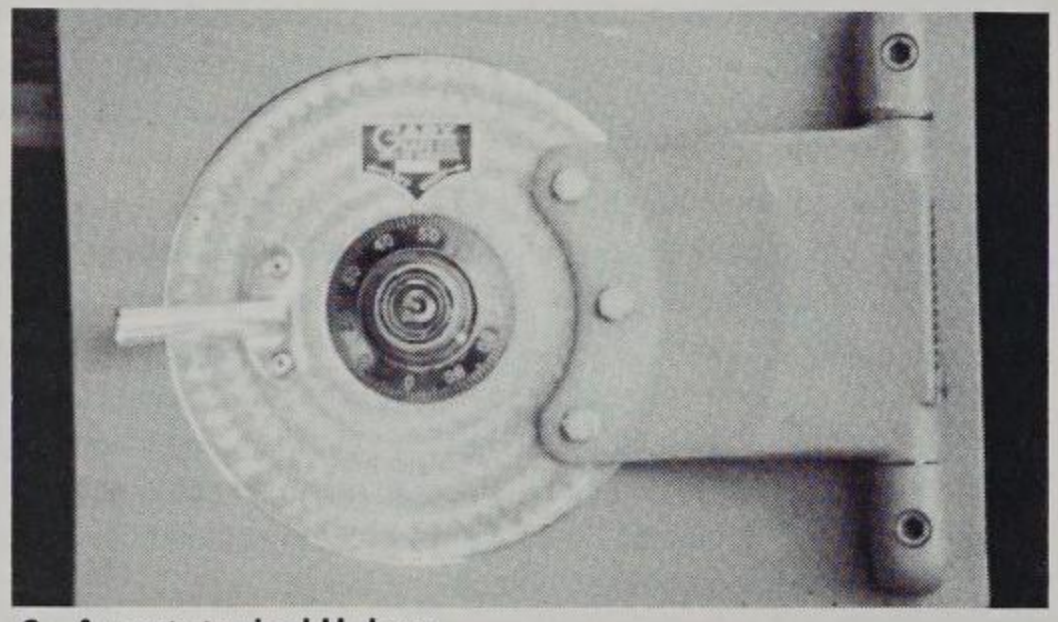
The only difference between the V and H doors is that the V (vertically mounted) door requires a hinge assist spring. The H (horizontally mounted) door does not.

A prototypical H door is shown in photograph nine. These doors also came with a nickel-jiggered finish and are not case-hardened.

As we have discussed, the E70 doors have randomly located drop-in points, with a disproportionate (but not a high) percentage of them dropping in within a few numbers of 98. I have found, however, that the drop-in points on the V and H doors are not nearly as randomized. The majority of them have the locks mounted with the lockbolt pointed at 16, or nearly the 2 o'clock position. Allow me to elaborate for a moment on this point. The E, H, and V 70 series doors were manufactured beginning approximately with serial number 64,000. (The exact serial number is not known.) It has been my experience that a very high percentage of V and H doors with serial numbers above 70,000 have the locks mounted at 16. Such is the case with the H door shown in photograph ten. This is a rear view with the back plate and back cover both removed. Only a small percentage of these doors in this serial number group have random drop-in points.

The V and H doors with serial numbers between 64,000 and 70,000 seem to have the drop-in point a lot more randomized. I would very much like to hear from you fellow safemen concerning your own findings on these doors. Maybe we can pool our resources and narrow the serial number variances down a little more.

I should mention that if the lock is mounted at 16, the drop-in point is 39, the internal relocker drill point is 1 × 1-1/16″, and the external relocker drill point is 73 × 1⅝″. If you should run across one that is randomized, you will need to embark on a hunt and search mission as we did in our discussion on the E70. Happy hunting.■



9. A prototypical H door.

10. Rear view of the H door.

Diebold Jewelers' Chests

"These safes, generically referred to as jewelers' chests, were built to last a very long lifetime. Apparently, many of them are still going strong."

by Dave McOmie

This month we are going to discuss a neat series of safes manufactured by Diebold Safe & Lock way back in the late 1800's. These safes, generically referred to as jewelers' chests, were built to last a very long lifetime. Apparently, many of them are still going strong because I get occasional requests for information from fellow safemen all over the country. It is a difficult, time consuming task to explain the workings of these chests in a letter or phone call, so I decided to do a feature article on these golden oldies and make the information available to everyone in the industry.

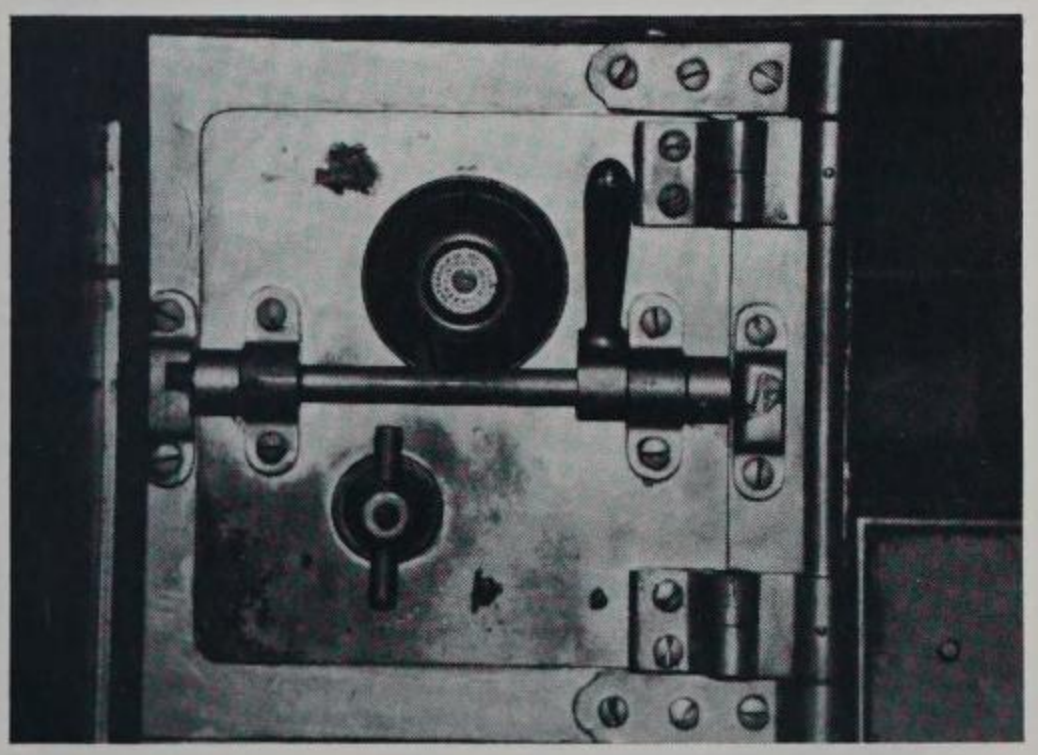
These chests are easily identified by observing the position of the handle in relation to the dial. Regardless of door size, pressure bar, or type of handle used, the handle is almost always mounted below and to the left of the dial. Diebold's name is usually on the dial also as are the patent dates.

The doors came in assorted sizes and shapes. The earlier models used a lock with a straight lockbolt and a rigid "T" or "L" handle to operate the boltworks. Later, an "anti-dynamite" feature was added to the lock and a "spinning" "L" handle replaced the previously used rigid ones. The locks used in most Diebold safes of this era, including those shown here, were manufactured for Diebold by the Peerless Lock Co. Though there were a number of variations in these locks over the years, most of these are minor, and several of the more commonly used locks will be covered here.

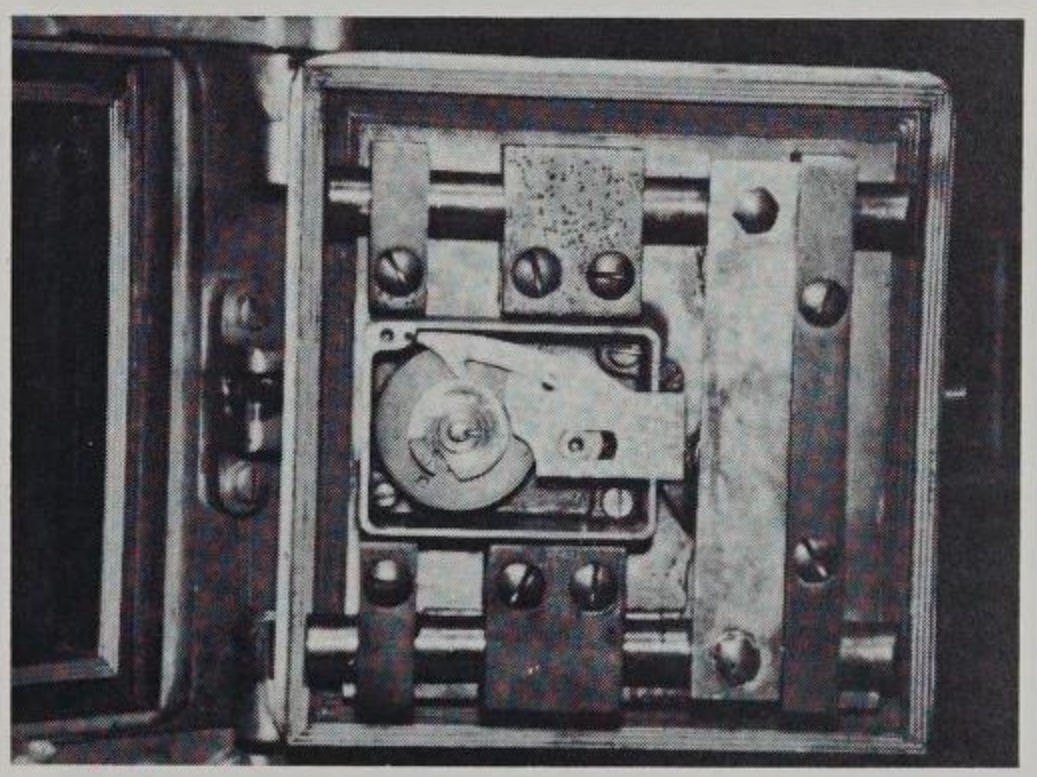
Pictured in photograph one is a typical Diebold jewelers' chest. Note the "T" handle mounted below and to the left of the dial. The pressure bar cuts the door horizontally in half.

Photograph two is an inside view with the back plate and back cover removed. The Peerless lock uses four 2½" diameter wheels, the driver is in back, and the straight lockbolt is used to check movement of the cam.

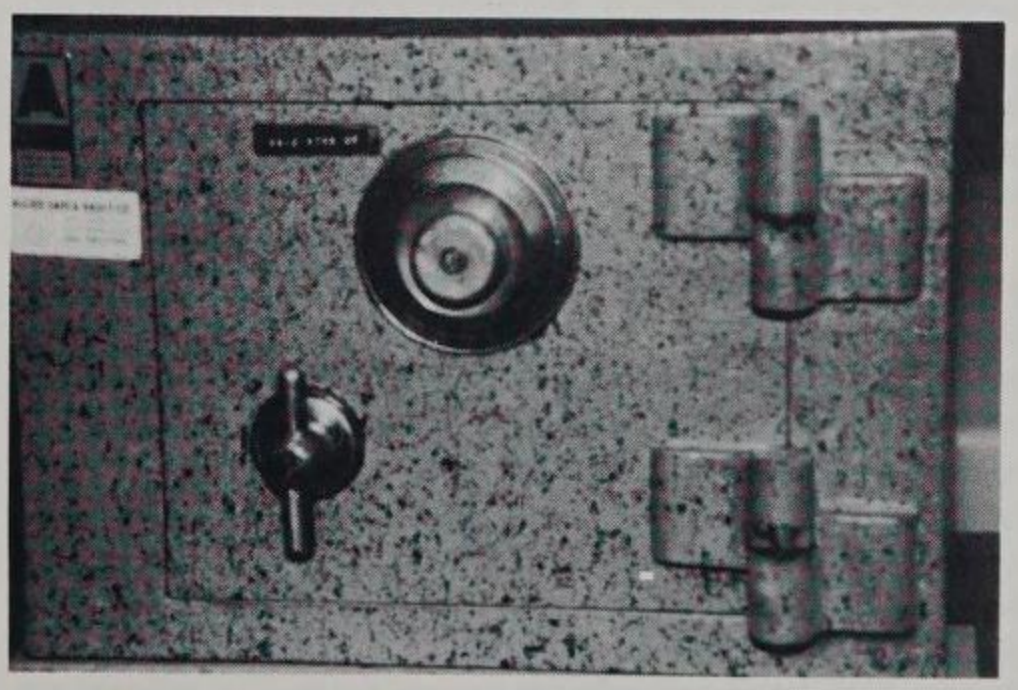
Photographs three and four are of a smaller door without a pressure bar. Again the handle is mounted below and to the left of the dial. From the inside we can see the configuration is pretty much the same as the previous door, with the exception that the lockbolt is blocking on both top and bottom.



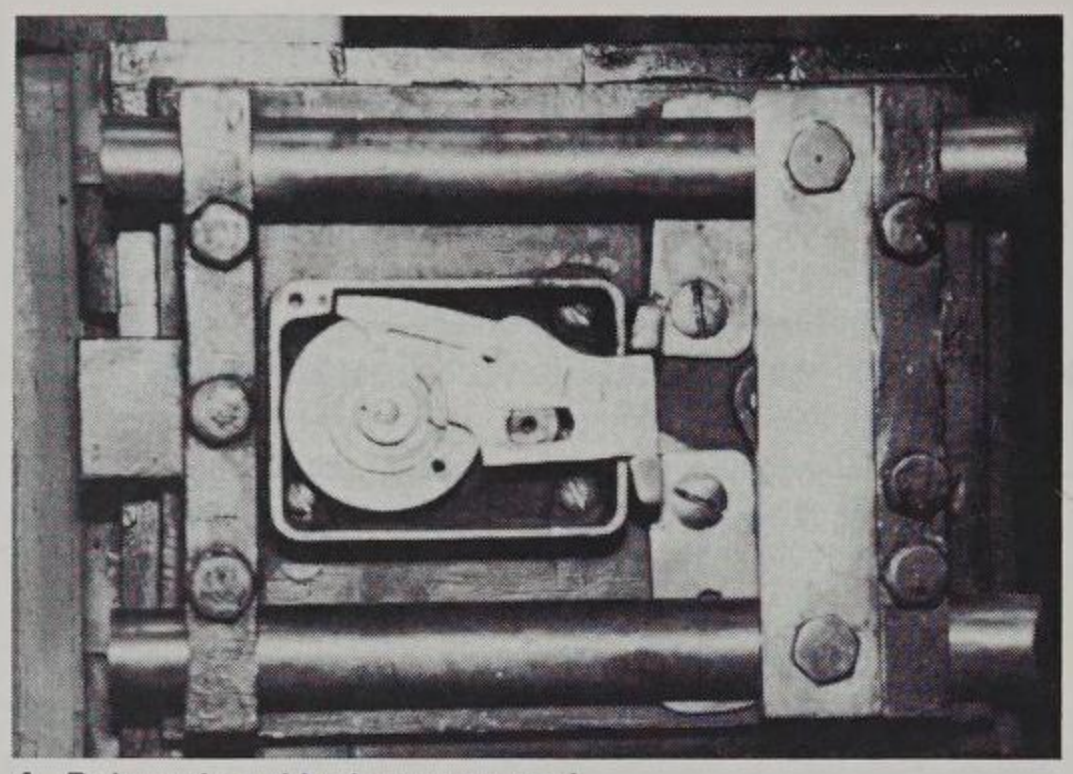
1. A typical Diebold jewelers' chest.



2. An inside view with the backplate and back cover removed.



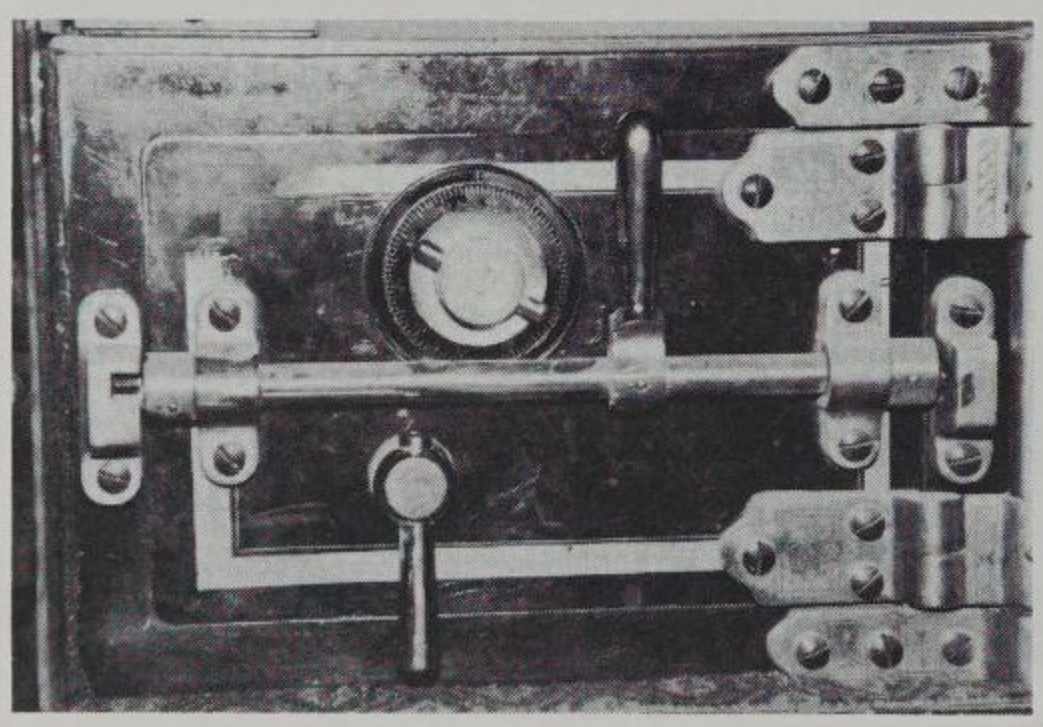
3. A smaller door without a pressure bar.



4. Boltwork and lock are exposed.

The last two chests are typical examples of Diebold jewelers' chests using rigid "I" or "L" handles which are connected directly to the cam and turn counterclockwise to open.

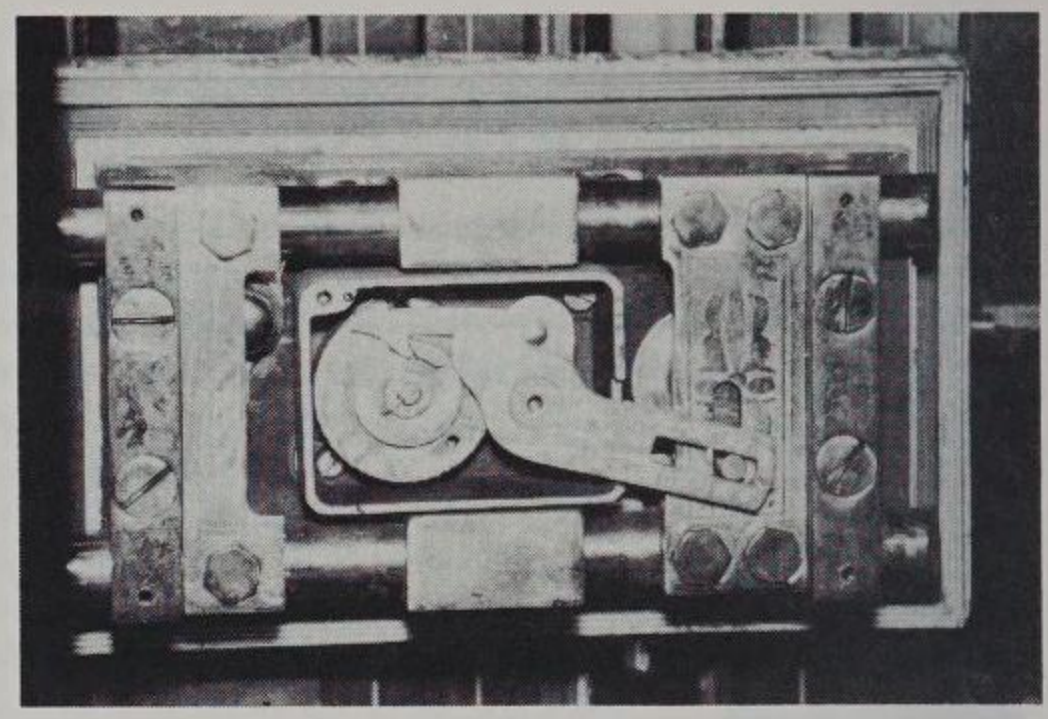
In photograph five things are starting to change a little. The first thing that catches the eye on this chest are the ears on either side of the dial (similar to Victor). This feature indicates among other things, a "spinning" "L" handle, which, as we can see, is mounted below and to the left of the dial. It also indicates that the chest uses the famous "anti-dynamite" lock. Invented by Albert Kirks in 1884 (patent granted in 1885), this unique device was added to the high quality Peerless lock and offered increased resistance to explosion attacks.



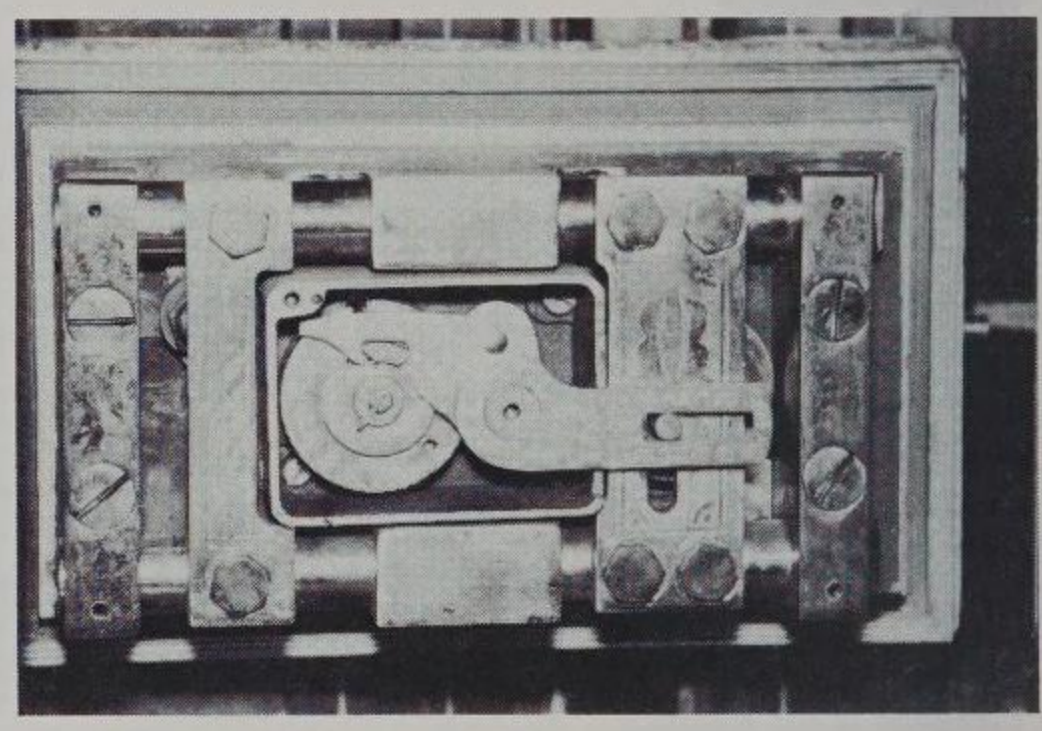
5. Note the ears on either side of the dial.

Photograph six is an inside view. Observe the long arm-like lockbolt with the slot in it. Engaged in the slot is a round peg about ⅜" in diameter. This sliding peg is attached to the bar that is bolted to the top and bottom locking bolts. In this photograph the fence has dropped in but the dial has not been turned to stop.

In photograph seven the dial has been turned right to the stop position. This brought the lockbolt up, carrying with it the sliding round peg which is now engaged in a slot in the handle cam. (Not visible in this picture). This makes the connection between the handle and boltworks. In this photo the handle has been turned clockwise and the locking bolts have been retracted. In case you are wondering why this handle turns clockwise to open and the rigid type handle turns counterclockwise, this is because the spinning type handle is not connected directly to the cam, but is offset and uses two gears to make the connection. Thus, turning the handle clockwise rotates the cam in a counterclockwise direction.

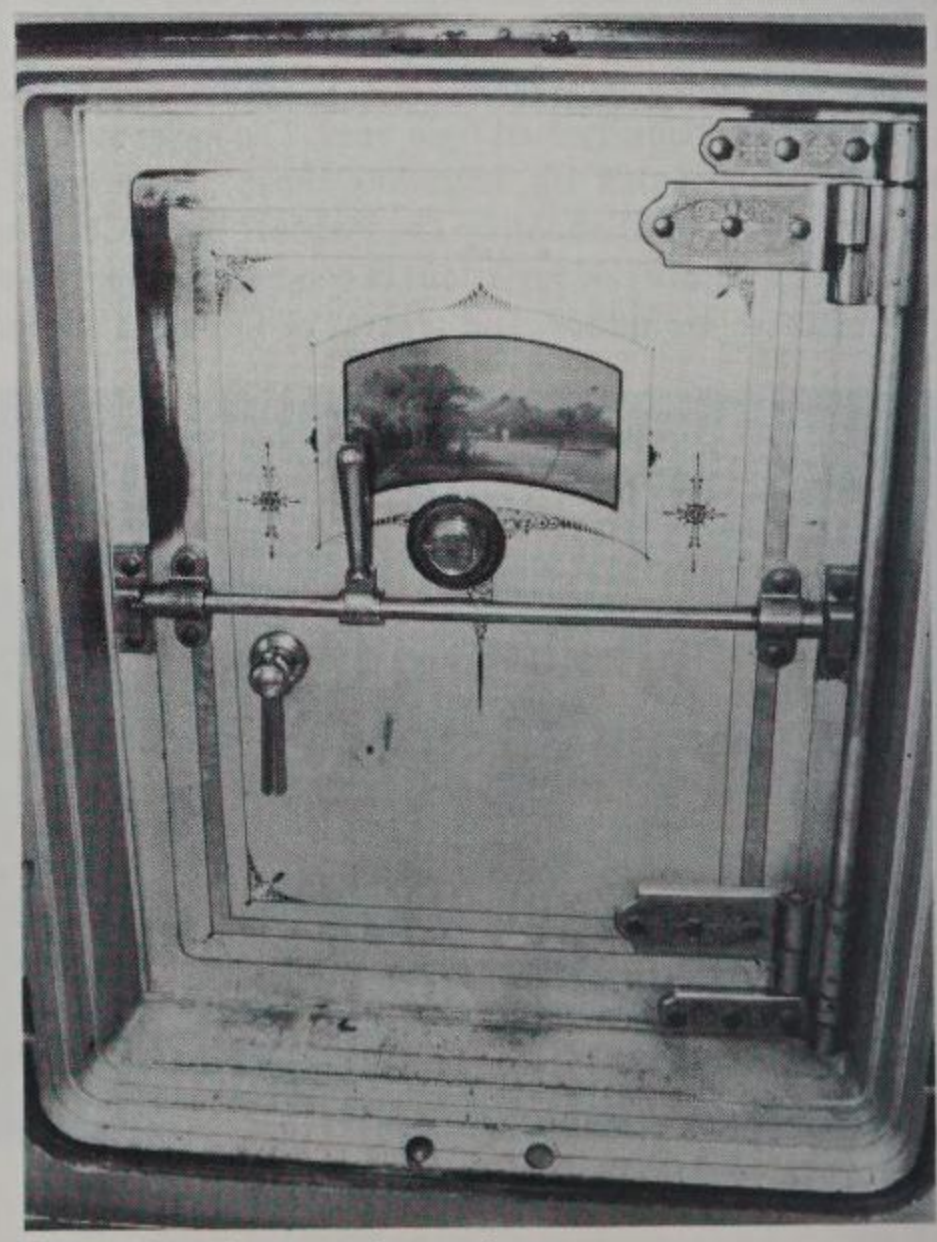


6. An inside view. Observe the large lockbolt.

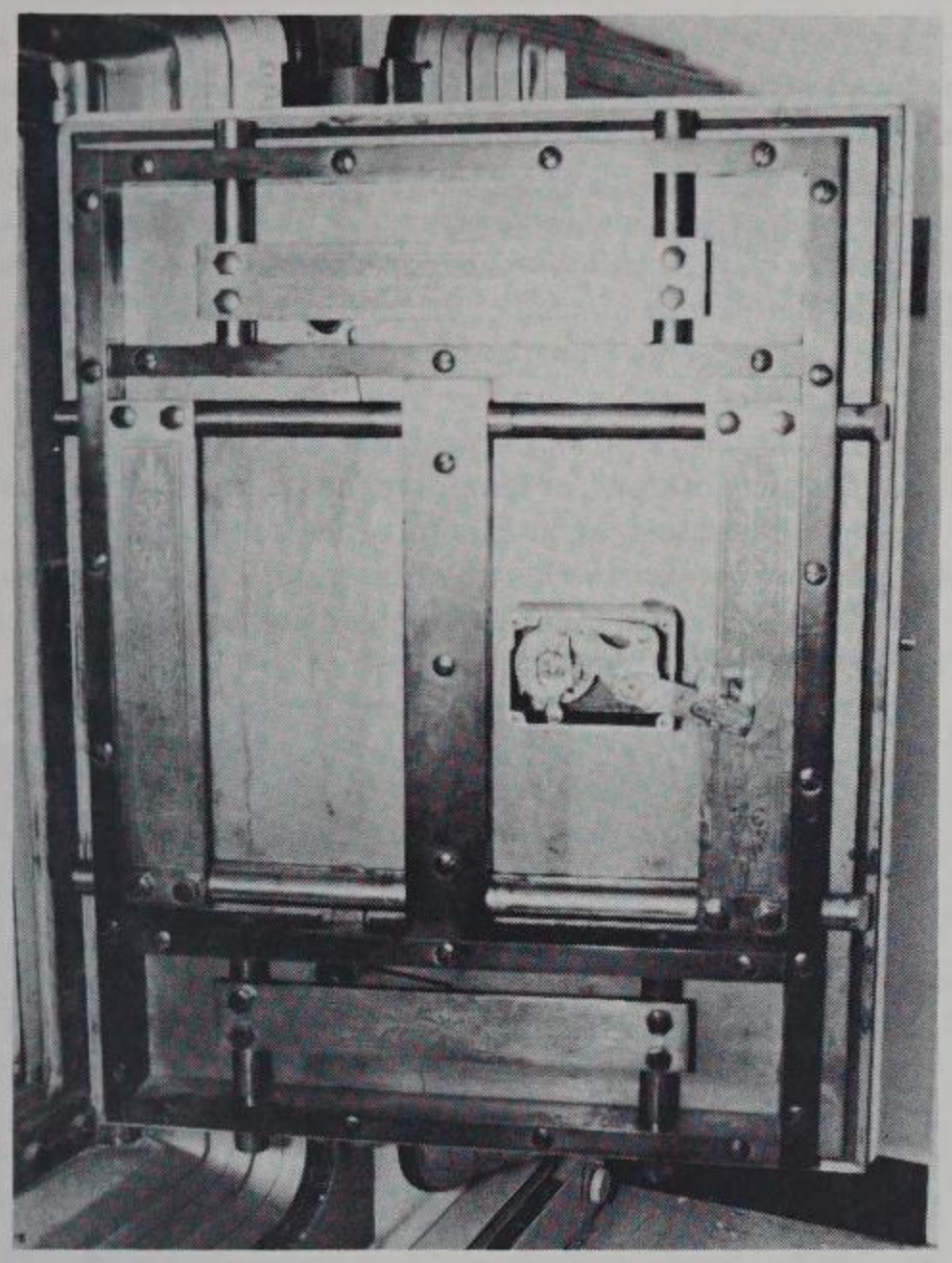


7. The lockbolt has been brought up.

Photograph eight shows the front of one of the largest inner chests I have ever seen. The door is over three feet high and is nearly three inches thick. It has the "eared" dial, a spinning "L" handle mounted below and to the left of the dial, and a large case Peerless lock with the anti-dynamite feature.



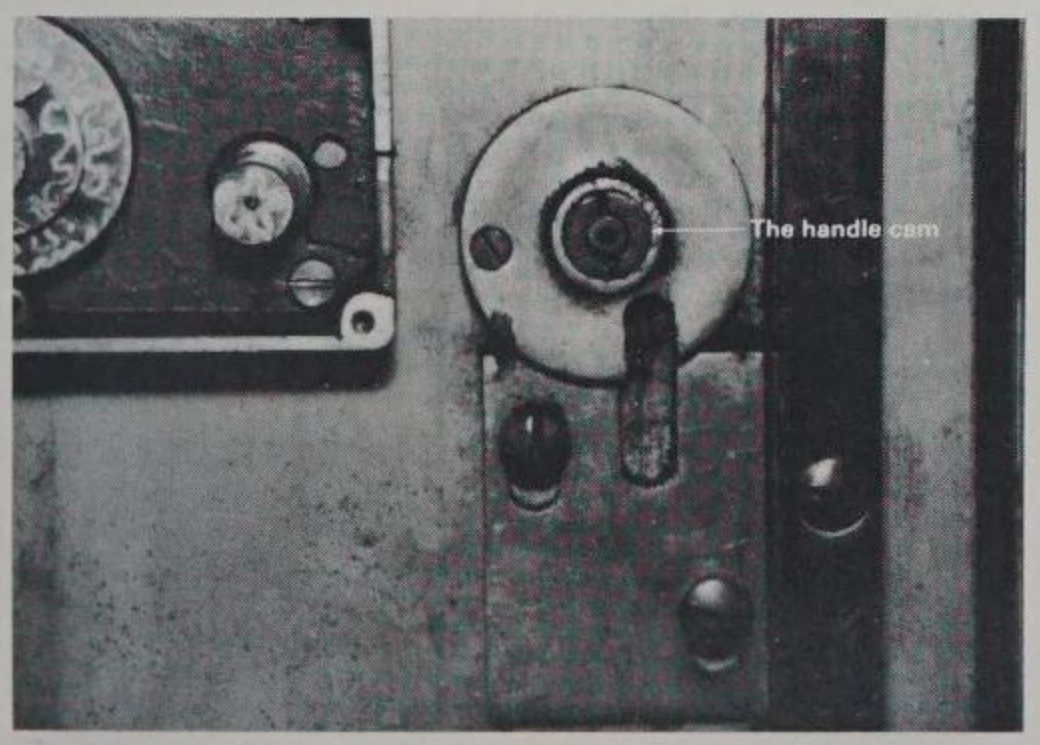
8. Shown here is a very large chest.



9. A rear view exposing the boltworks which are in the extended position.

Photograph nine is a rear view exposing the impressive locking boltworks which are in the extended position.

Let's stop for a moment to examine the anti-dynamite feature and how it works. In photograph ten, the bolt bar with the sliding round peg and the arm-like lockbolt have been removed. This exposes the other two components of the anti-dynamite device, which are the round handle cam and below it the rectangular block that houses the peg when the chest is in the locked position. When the peg is lifted up and out of the housing and into the notch in the handle cam, the handle can be thrown which retracts the locking bolts. Incidentally, without the rectangular block to house the peg, the chest could be opened merely by tipping the safe over onto the hinge side and vibrating the door. (The smaller doors that don't have room for the large rectangular block, have a smaller block mounted just left of the peg that serves as a stop.)

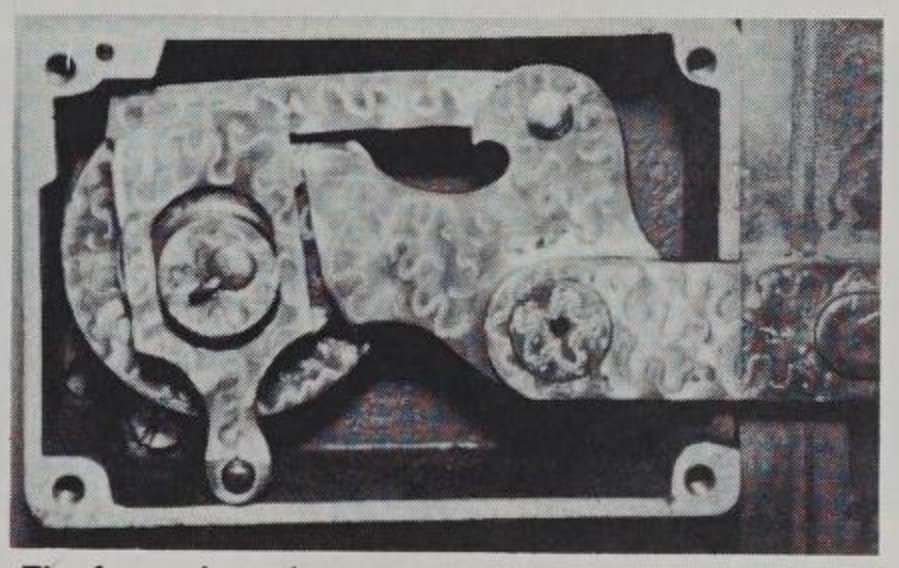


10. The bolt bar with the sliding round peg and the lock bolt have been removed.

Now that we know how it works, let's dig a little deeper and try to figure out what this device has to do with the explosion resistance. Then we will properly understand how it came to have such an interesting, provocative name. We are going back in time over a hundred years, to December 30, 1884. Listen, as Albert Kirks, in his own words, describes the invention that would soon immortalize him in the hall of safe-lock makers.

"My invention relates to improvements in safe locks. As aforesaid, if the lock were broken or forced from its fastenings, for instance, by an explosion of dynamite on the outside, the bolts would remain secured, and there would be no means of unlocking them from the outside, and no jarring or other violence from the outside would raise and hold the said intermediate connections while the bolts are being withdrawn."

Mr. Kirks rightfully points out that an explosion severe enough to force the lock off the door, would still not raise the peg into the handle cam which would allow the bolts to be retracted. However, if the lock were blown off a rigid handle type chest, the handle, being directly connected to the cam, could be thrown and the bolts retracted.

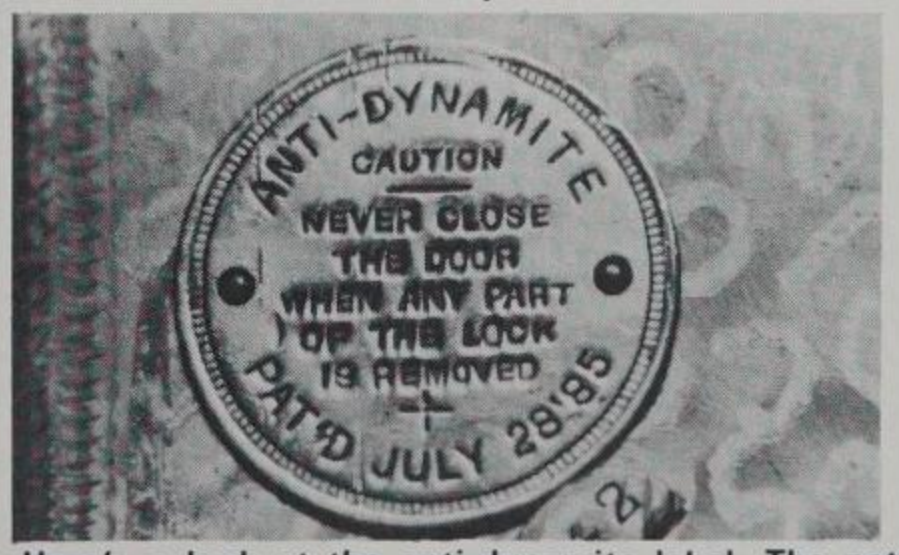


11. The fence drops in.

This is fine, but with all due respect to Mr. Kirks, I would like to point out one flaw in the design, which was probably never discovered. I believe that if, after blowing the lock off the door, the whole safe were tipped upside down, and the handle jiggled a little, that gravity would pull the peg right into the slot in the handle cam which in turn would allow the bolts to be withdrawn! Even if gravity alone didn't accomplish this, I'm sure that vibrating the door would.

The large case Peerless lock has an added manipulation resistant feature. On the back of the eccentric drive cam lobe is a slide assembly that moves back and forth with the elliptical orbit of the lobe. Protruding from the lever is a small metal pin that rides on the slide assembly. Only at the drop-in area does the slide move over for enough to allow the fence to drop in, as shown in photograph 11.

Photograph 12 is a close-up of the anti-dynamite label on the back cover of the lock. This really is timeless advice, isn't it?

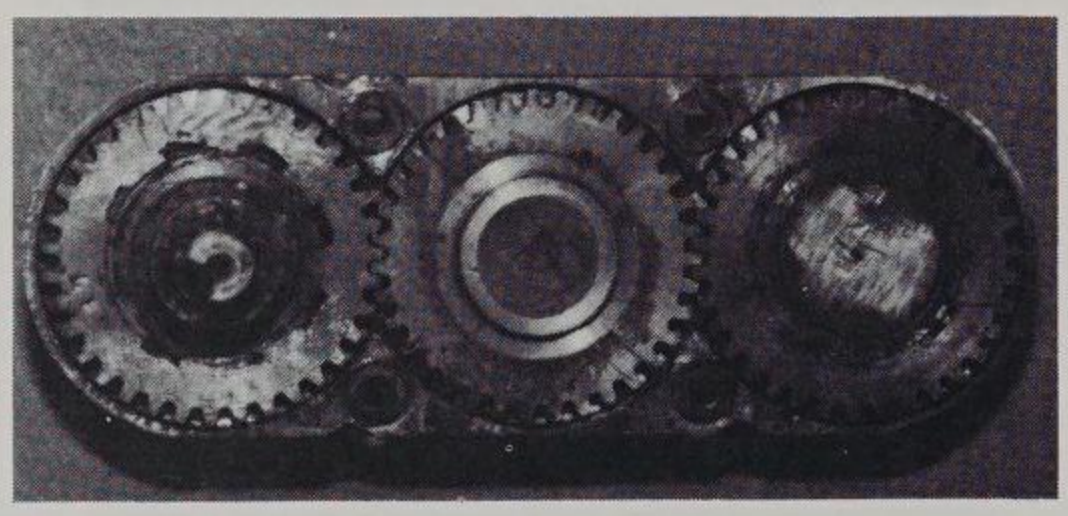


12. Here's a look at the anti-dynamite label. The patent dates back to 1885.

Well, now that we've covered the basics, let's work our way up to an opening technique. You may have noticed that all these chests have the dial mounted, to varying amounts, above the horizontal centerline of the door. You also may have noticed that the lock, in every case, is mounted very nearly in the horizontal center of the door.

This is the key to deducing a drill point for one of these chests. We start with the assumption that the lock is mounted in the horizontal center of the door. It has been my experience that plus or minus ⅛" this is almost always the case.

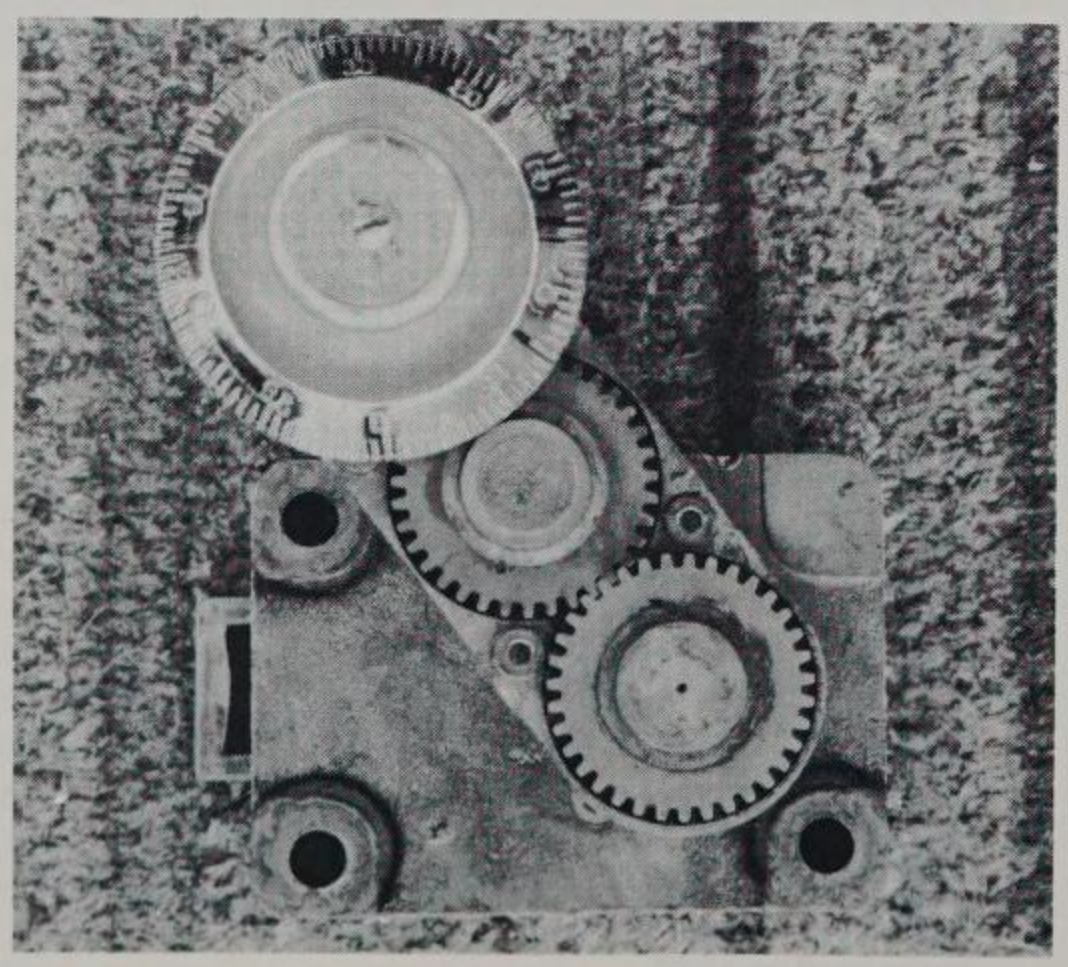
By now, you may have guessed that there is a geared connection between the dial and the lock. Right you are. Photograph 13 shows the gearbox with the cover removed, exposing the three gears. The gears each measure 1¾" in diameter. The critical measurement, which is the distance from the center of the dial gear to the center of the lock gear, is 3½". You should know that the gearbox is laminated into the door, and access to it is gained only by taking the door completely apart, lamination by lamination. This is a real job. I want to thank my good friends Joe Courtade and Rob Eaton of Associated Safe &



13. The gear box with the cover removed.

Lock for their help, and I owe them a steak dinner for donating the gearbox to my collection. Muchas gracias, guys!

Photograph 14 gives us kind of an x-ray view of the dial, gears, and lock, as they would appear if we could see right through the door. This is the most common configuration, with actual wheel center being below and to the right of the dial. The angle of the gearbox from dial to lock will vary from door to door, depending on how far the dial is mounted above the centerline, but our method of deducing the drill point will negate the importance of this variable.

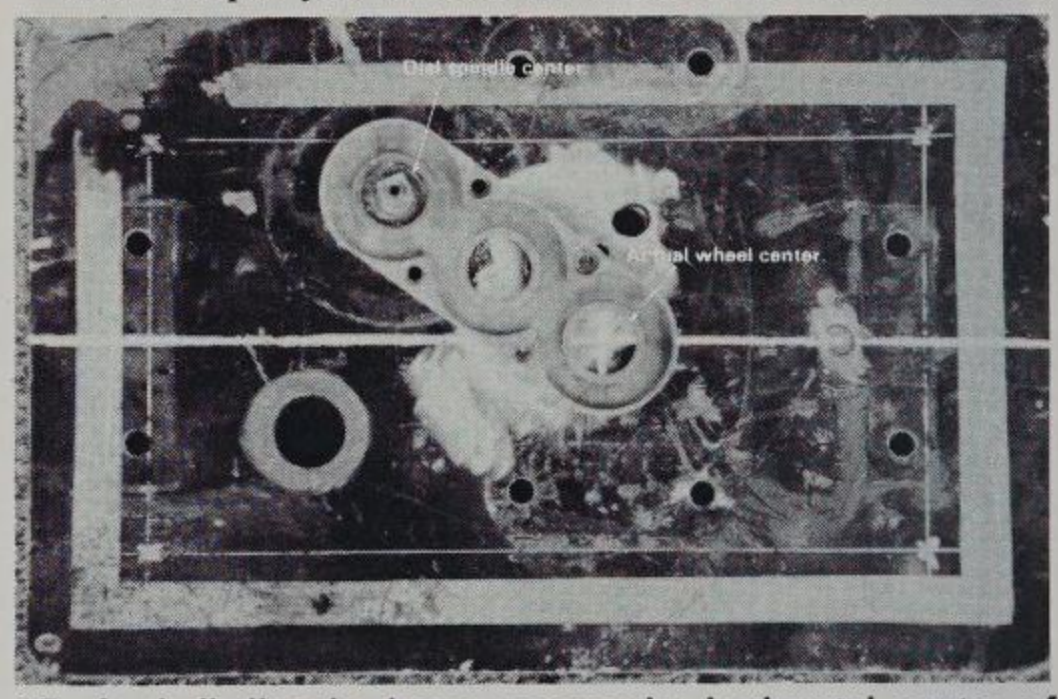


14. A view of the dials, gears, and lock.

The first step in deducing a drill point on one of these chests is to locate actual wheel center. Based on the key assumption that the lock is mounted somewhere along the horizontal centerline, and also on the assumption that it uses the triple gear, here is my method of locating actual wheel center. With one exception that I am aware of, this method works on all size doors, regardless of pressure bar or type of handle. Proceed as follows:

1. Back out the screw from the center of the dial and remove the dial and dial ring.
2. If the chest has a pressure bar, remove it.
3. With a piece of chalk, or some other non-permanent marker, draw a line across the horizontal center of the door.
4. Cut a piece of wire to a length of exactly 3½". Lay one end at dial spindle center and mark where the other end meets the centerline to the right of the dial.

This will put you as close to wheel center as is humanly



15. A chalk line is drawn across the horizontal center of the door.

possible. In photograph 15, I have drawn a chalkline across the horizontal center of the door. Instead of using a piece of 3½" wire, I have layed the gearbox cover with one end at spindle center, the other intersecting the centerline. This graphically illustrates just how simple it is to deduce actual wheel center.

Now that we know actual wheel center, our next step is to formulate a drill point that will miss the gears and enter the lockcase causing minimal damage.

Due to the risk of hitting a gear, I do *not* recommend drilling at the drop-in-point. On certain chests, where the dial sits very close to the centerline, the gearbox will be at such an angle as to allow penetration at the drop-in-point without hitting a gear but that is a heckuva chance to take. Remember if you damage a gear, you will have to disassemble the door completely to get the gear out for repair. This is not fun.

Although there are differences in the lock cases of the various Peerless locks, there are two points of penetration that work well on all the locks I have seen. At 15 x 1¼" out from actual wheel center, you can sight the wheels by eye and transfer to drop-in. At 63 x 1½" you can view the wheels with a borescope and transfer to drop-in.

I have found these chests with doors ranging from 2" to 3¼" thick, but have not found any way of determining this from the outside, so keep up the back pressure. The hardplate I have drilled has ranged from mediocre to doggone hard, so be sure and have a good supply of drill bits on hand.

The one exception that I made reference to when we were determining actual wheel center is the large door. (*See photograph 8.*) Instead of the lock being mounted below and to the right of the dial, it is below and to the left of the dial. If you have one of these to open, be sure and adjust your drill point accordingly. And let me know how you make out.■

This is one of my favorite articles. I remember the pumping of adrenaline when the secret to these doors came to me in a flash of insight. Without the secret, drilling a Diebold jeweler's chest is a nightmare hit-and-miss proposition. With the secret it is a piece of cake.

— A NOTE ABOUT THE DECEMBER 1986 ISSUE —

The one and only issue I have ever missed. I was hand writing articles on a yellow legal pad, and was in the habit of waiting until the last minute to finish an article, which I would then rush over to the airport and Fed-Ex to Chicago. Well, the day before the deadline for the December issue (meaning before I even started it), I dropped a very heavy safe on my hand, causing a big enough owie to keep a pen out of my hand for more than a month. See February 1987 for details.

Safeman Versus Relsom

"To be honest, the word hardplate does not do justice to the material Mosler used in these doors. This is the most widely feared hardplate of all time."

by Dave McOmie

Before we get into this month's main event, I would like to give a short sermon on a couple of things I consider indispensable to the modern safeman. First and foremost is the positive virtue of patience. Getting in a hurry or losing your temper are cardinal sins to be avoided at all costs at all times. Usually I practice what I preach, but this past month I let a situation rattle me and an already difficult opening nearly became a disaster. Later in the article I will describe exactly what happened. It will probably make you chuckle, and hopefully it will reinforce the importance of keeping your cool.

Second, and almost equally important is the acquisition of information and knowledge. A good safeman cannot survive without it. Oh sure, anyone can "wing it" and pop open a lot of easy safes by using a common sense approach; but the serious student must prepare himself for more than just the easy ones. Believe me, when you are up against a container with a TRTL-30 or higher label, you cannot afford to guess. Acquiring all the available literature on the subject is easy since there is not much of it and is a step in the right direction. Add to this by acquiring your own pictures and information as you gain experience by working on and opening safes.

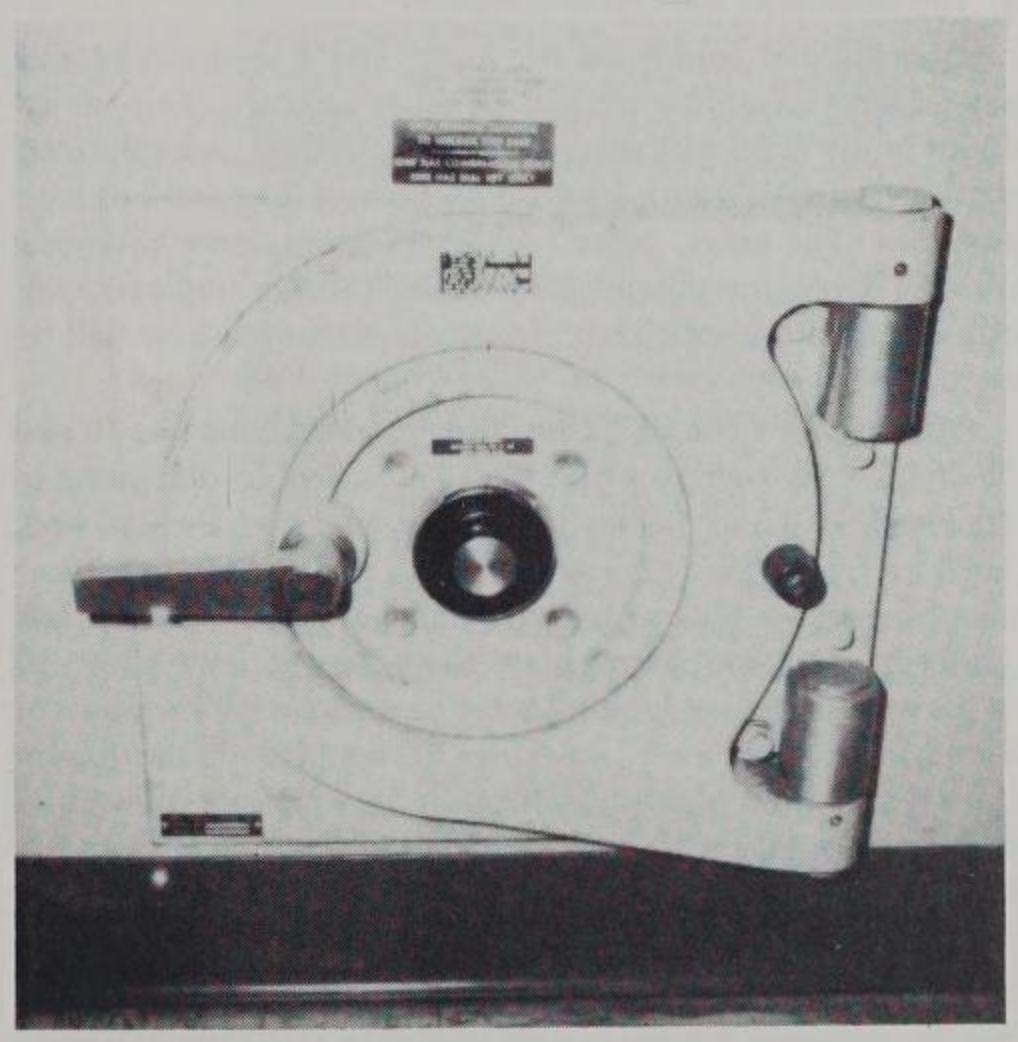
As your own technical library expands, you will probably start trading pictures with other safemen just like you traded baseball cards as a kid. "I'll swap you pictures of this ISM for pictures of that SLS," and so on. In addition to being great fun, this will prepare you to handle many difficult lockouts with a minimum of guesswork and drilling. It will also enhance your safe identification skills. This month we will see just how important proper safe identification can be in order to correctly identify the lock and internal configuration.

Most of the openings I did this past month were quite routine, but two of them stand head and shoulders above the rest and are worth mentioning.

John Davis, owner of Davis Safe & Lock called during lunch and needed my services right away. The head office of a large department store chain had contacted him about opening safes in two of their stores. The combinations to the jewelry department safes in both stores had been lost some time ago and they wanted them opened ASAP. Now how does that grab you? The customer has been locked out since last spring, but calls and wants the safes at both locations (30 miles apart) opened right now! Don't get me wrong, I do appreciate the business, but this has always been a real pet peeve of mine.

Anyway, I told John to tell them no problem, that I could open both safes, but the repairs would probably have to wait until the following day. Having done work for this particular chain before, I knew what the safes were and I loaded up for bear. Both containers were Mosler TRTL-30 lug doors, and if safes were bears, these would be grizzlies.

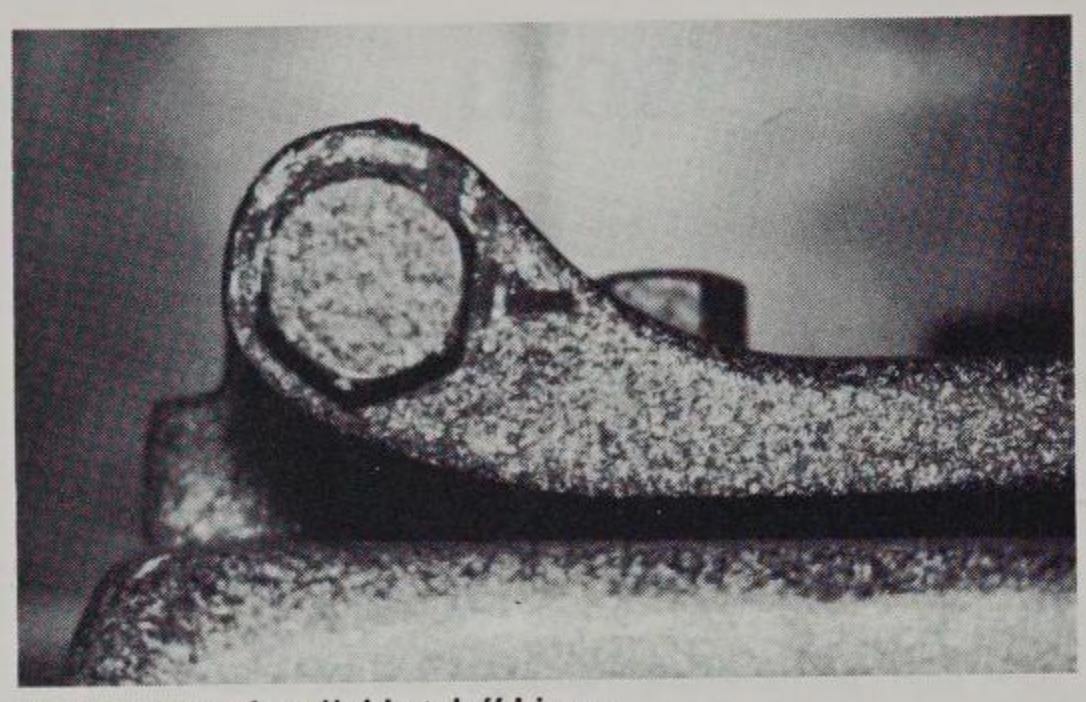
Barely thirty minutes later I arrived at the first store packing my tool kit under one arm and trusty Penetrator drill rig under the other. Store personnel promptly escorted me to the safe, which appeared very much like the one shown in photograph one. (They wouldn't allow pictures to be taken, so I am using pictures of another similar safe.) By observing the hinge, I knew instantly that this was a "new style" door. These doors, which came out in the early 1960's, have much thicker, heavier duty



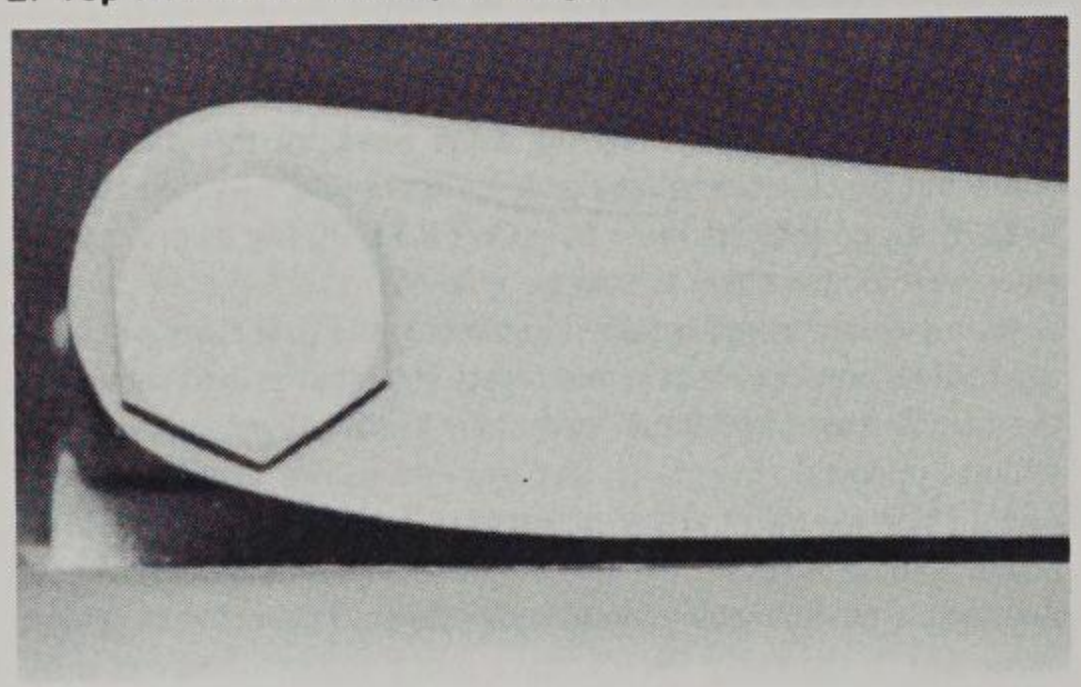
1. "New Style" door safe.

hinges than did their predecessors. Photograph two is a top view of an old style hinge, photograph three is a top view of a new style hinge. There is a marked difference, and this is an excellent method of distinguishing old from new. I should point out that both styles of doors are obsolete; the terms "old" and "new" are used only as identification aids.

The new style doors also use silver hinge caps (I'm not sure whether the finish is anodized aluminum or satin nickel, but they are silver). By observing the silver handle, and the door stop that uses a ¼" x 20 mounting screw I had a hunch this was the more recent of the two new style doors. Reaching down and



2. Top view of an "old style" hinge.



3. Top view of a "new style" hinge.

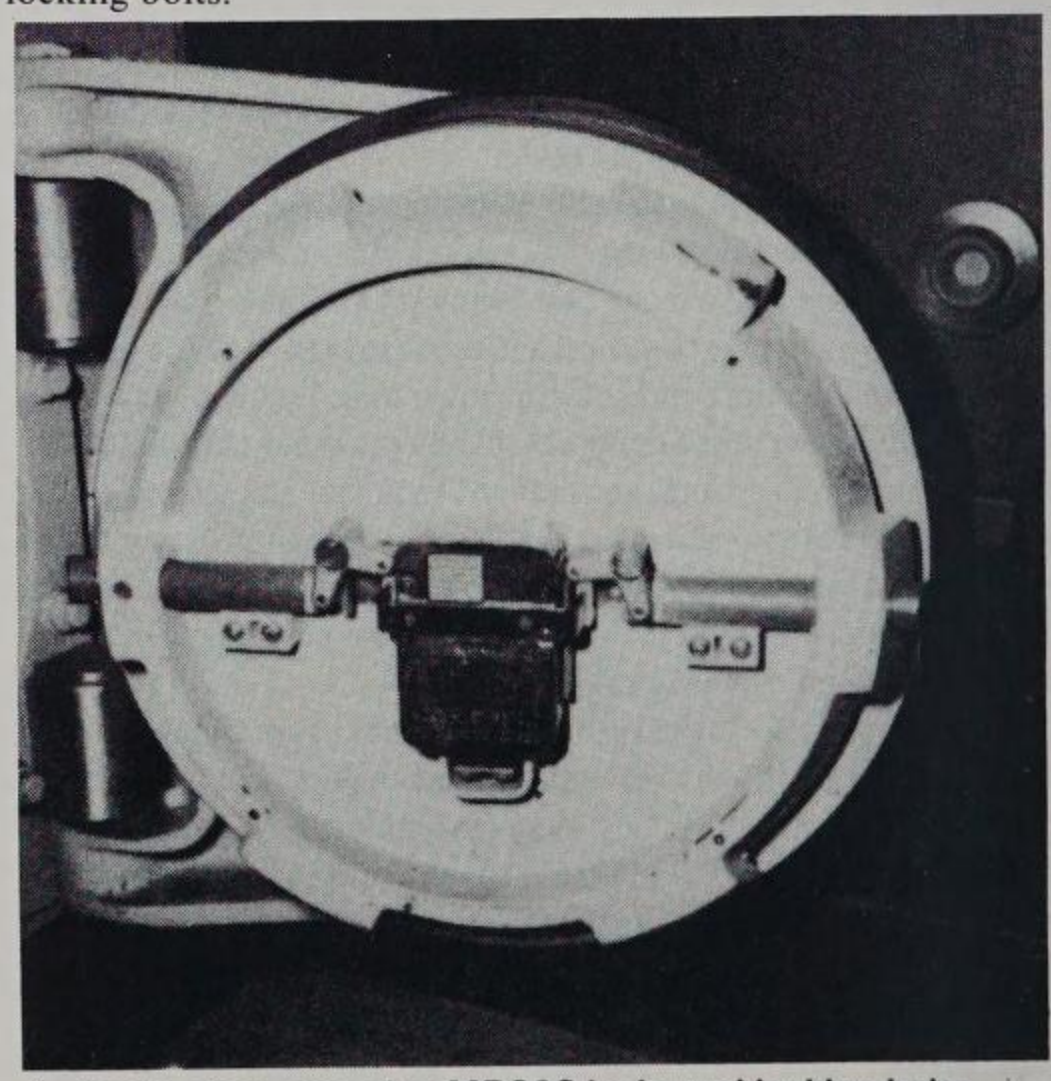
turning the dial confirmed my hunch. As I approached and passed zero, an audible click-click could be heard. This left no doubt in my mind that this safe had an MR302 lock mounted vertical down (VD) with dual locking bolts at the 3 and 9 o'clock positions. The other, older "new style" door came equipped with a 120 lock mounted left hand (LH) with a single locking bolt on the hinge side at the 3 o'clock position. These will be discussed shortly.

After trying a couple of longshot combinations like 50 and 50-25-50, I got right to work. First I attached my dial puller to the plastic dial and quickly removed it, and then the dial ring. Then I removed the four rosettes which exposed the four bearing plate screws. With a 12 point ⅜" socket I removed these and gently pried out the bearing plate. Swinging the crane hinge out of the way, I was now looking at the bare surface of the door (or the surface of the bear!) I stuck my 302 template on the door in the VD position and attached the drill rig to the safe with the ⅜" drill bit aimed right at the fence. For those of you who do not have these templates, the drill point for the fence on a 302 mounted VD is 67 x 1⅛". I drilled into the door, through the copper layer, down to a depth of about 2", and penetration ceased. I mean to a dead halt. As expected, I encountered some very excellent hardplate. To be honest, the word hardplate does not do justice to the material Mosler used in these doors. In fact when Mosler introduced these plates, some 20 or 30 years ago, they gave it a very special name all its own. They reversed the spelling of Mosler and called this super-duper hardplate "Relsom." This is without a doubt the most famous and widely feared hardplate of all time. Very few of the exotic barrier materials being produced today are as difficult to penetrate as Relsom. These plates are filled with big chunks of carbide and will make mincemeat out of any drillbit. I'm not kidding; Relsom is an equal opportunity drill bit destroyer. It will ruin the tip of a 99¢ masonary bit just as fast as it will the tip of a $30 solid shank tunsten carbide bit. This ought to give you a tip on which bits to use.

I gathered up all the cheap half used bits that were rolling around in my tool kit and prepared them to meet their doom. I also layed out a variety of center punches, chisel-edge punches, my marlin spike and 3 lb. hammer. Alternating medium speed drilling (1500 rpm) with some vicious punching attacks, I penetrated the Relsom with about a dozen bits and 90 minutes of my time. This pleased me greatly, because I usually spend almost twice this amount in time and drill bits putting a hole in this awful stuff. I then drilled through the next steel plate, and with a hi-speed bit carefully penetrated the lockcase. After removing the entire drill apparatus from the door, I clicked on my spark plug light and looked in the hole. It was perfectly placed, right on the fence. I chucked a 5/32" hi-speed bit, aimed right for the little dab of silver solder on the end of the fence, and removed the fence from the lever. As I turned the spindle to the right, the nose of the lever dropped in to the drive cam gate and the locking bolts retracted. I reattached the crane hinge and bearing plate and got the attention of the department manager. She came over, rotated the door and the safe was open.

Photograph four is an inside view with the back plate removed, exposing the MR302 lock and the two locking bolts.

Photograph five is a close up of the lock with the back cover removed. We can also see the bellcranks, the two screws that hold the bellcrank operating plate on to the end of the lockbolt, and part of the two external relockers. With the back cover removed, the flat steel type relockers will prevent the locking bolts from being retracted. When the back cover is in place, the relock strap on the back cover holds both relockers in against the door and in this position they do not block the travel of the locking bolts.



4. Inside view, exposing MR302 locks and locking bolts.

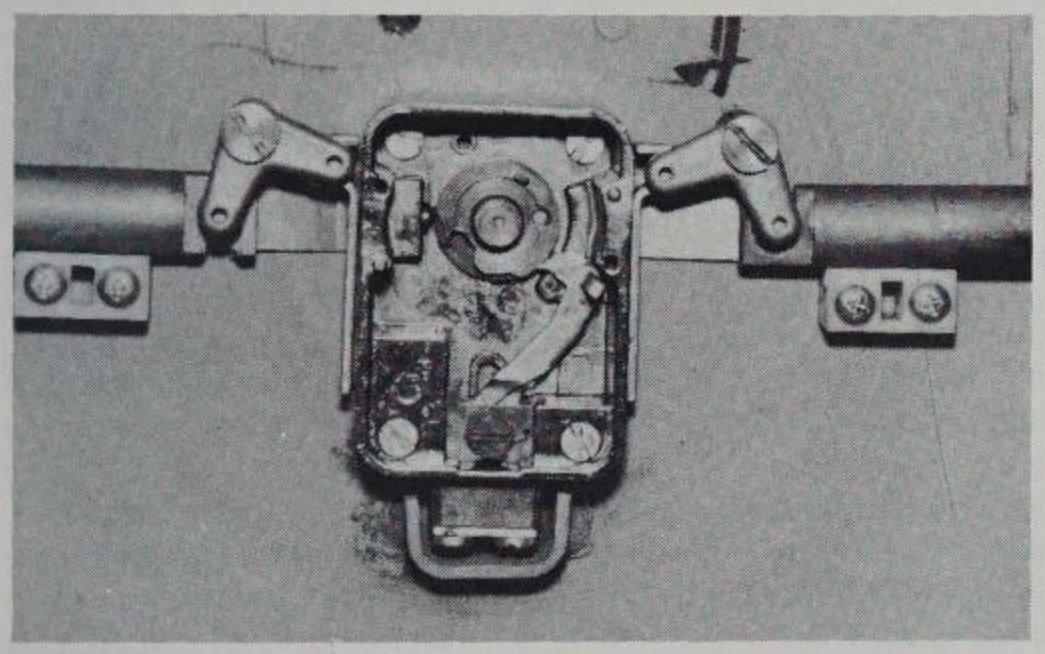
After advising the manager that I would be back tomorrow to do the repair, I stuck the dial back on to the spindle and closed the safe. Most businesses appreciate this, as they do not want to advertise the fact that their safe is out of commission and want everything to appear as normal as possible.

I loaded up my gear, slugged down a Classic Coke, and headed down the highway listening to my latest Merle Haggard tape. Boy, I was feeling good. I just knew I would make it home for dinner. Little did I know...

Upon arriving at store number two, I was once again escorted to the safe and introduced to the jewelry department manager. Not being one to waste any time, I got right to work. Everything was fine till I got down to the Relsom and began punching. At

this point the manager had an absolute cow. I was making altogether too much noise and could I *please* quiet down. I calmly explained to her that if she wanted the safe open that no, I could not quiet down.

So I continued on with my job, and she with hers. But every ten minutes or so she just had to make a comment. First came the suggestion that I go get some dynamite. Then more grumbling about the noise. Then she asked how old I was, and how long had I been doing this kind of work. (I get that a lot.) Then some more grumbling about the noise. Then she had the brilliant idea that we should call the state penitentiary and find a "real" safecracker.



5. Close-up of lock with back cover removed.

It went on and on; she made all the usual dumb remarks, and even a few I had never heard before. It was beginning to get on my nerves. And to make matters worse, I was getting absolutely nowhere with this blasted Relsom. I was going through drill bits like crazy and my right arm felt like lead from swinging that big hammer so much. My blood was beginning to boil, and then it happened. I was in the middle of an Arnold Palmer backswing when, in a loud belligerent voice she barked out: "Are you SURE you know what you are doing?!?" I'm telling you I saw instant crimson, bloody, fire engine red. I reared back and swung that big hammer with all my might. It came crashing down like a pile driver but unfortunately I missed the marlin spike. By about an inch. You'll never guess what I hit. Of all the nightmares made in hell, I hit the spindle! And if you haven't already guessed, this was not a shouldered punch-proof spindle. (It should have been.)

I was momentarily in shock. I think the lady sensed this, for she never said another word to me. (Lucky for both of us.)

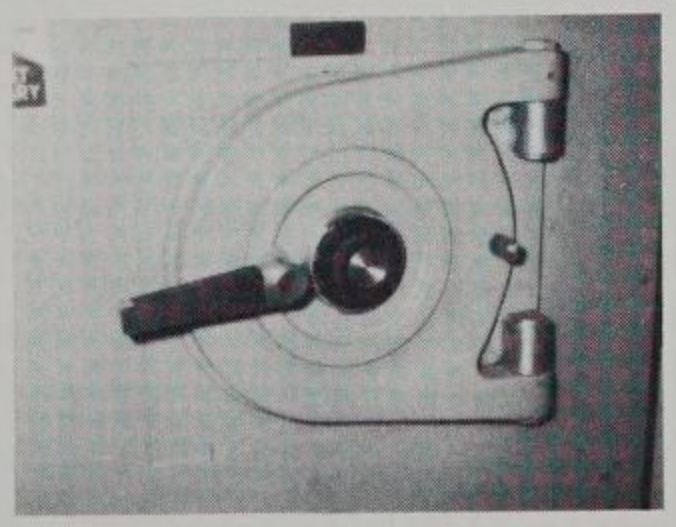
After I regained my senses, I closed in to survey the damage. Luckily I had struck the spindle a glancing blow rather than a direct hit. I pulled the spindle out and pushed it in. It went in about half an inch and stopped. This indicated that the back cover was loose, but still attached to the lockcase. I wouldn't know for sure if any of the relockers had been set off till I got into the lockcase. This meant getting back to the job of penetrating the Relsom. I didn't realize until now what a variance in difficulty there could be. I had flown through the first one, now an identical safe with the same label and supposedly the same material construction was giving me serious trouble.

So I went back to work, and I did everything I could think of. I tried lo-speed (550 rpm). I tried hi-speed (4,500). Light pressure. Heavy pressure. I sprayed liquids into the hole. I switched drill bit brands and sizes. I prayed. I cussed (silently). I even freehanded the Hornet and used the hammer drill feature. I drilled and punched and punched and Finally, many hours and many, many drill bits later I made it through. In all my years of experience I have drilled through quite a few plates of Relsom, but this was absolutely the toughest one I have ever put a hole in. Bar none.

Once again I drilled through the last steel plate and with a hi-speed bit penetrated the lockcase. Carefully I drilled the fence off and turned the spindle to the right. The lever dropped in but would not retract. Great. This meant that at least one relocker was set off. Very, very carefully, with a brand new (sharp) drill bit I drilled through the back cover of the lock. I was worried that it would not be able to take the pressure from the drill bit and would fall off, but thank goodness it didn't. With a stout piece of wire I reached through and pulled the back cover tight. Quickly I turned the spindle, retracted the locking bolts and opened the safe. I let out a very deep, long sigh of relief. And not a moment too soon, as it was well past closing time and everyone was ready to leave.

Had the back cover fallen off, I would have had to put two more holes in the door to neutralize the relockers. Not exactly a pleasant prospect. Losing my cool for just a second had almost cost me dearly. I relearned an important lesson I thought I had learned ten years ago, and hope you can benefit from my experience.

Okay, we've covered the infamous dual-bolt door; now let's take a look at its sister door shown in photograph six.



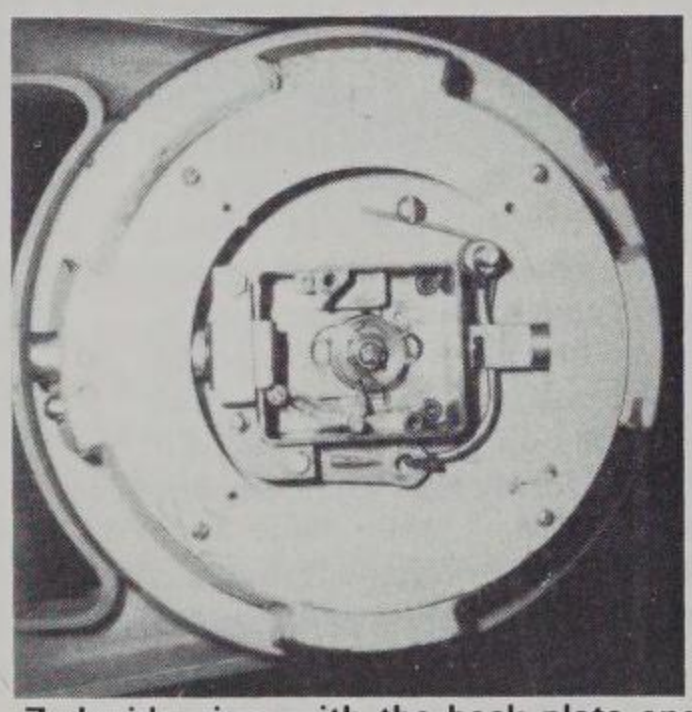
6. Single-bolt door with a 120 lock.

Notice the ribbed black plastic handle grip. This is a good indication that this is a single bolt door using a 120 lock mounted LH, with the locking bolt on the hinge side at the 3 o'clock position. If it is a TRTL-30, it will have a relocking bolt at the 9 o'clock position.

There is one more thing we can examine on the outside of this safe; the door stop. If a new style safe has a door stop with a ¼ x 20 mounting screw, the probability is good that it is a dual-bolt door using a 302 lock as previously discussed. If it has a door stop with a 5/16 x 18 mounting screw, like the one pictured the probability is very high that it is a single bolt door using the 120 lock mounted LH. If it does not have a door stop, but has a ¼ x 20 round head screw that is threaded into the stop bar, this tells us nothing, because either door can be set up this way.

Photograph seven is an inside view with the back plate and back cover removed, exposing the lock, locking bolt, and the relocking bolt with fusible link.

Notice the lever is on the bottom. To my knowledge, Mosler has never produced a true left hand safe lock. When a left hand mounting is required, they simply take a right hand lock and turn it upside down. A 120 lock mounted RH drops in at about 98; this one is mounted



7. Inside view with the back plate and cover removed.

LH, so the drop-in point is correspondingly 48.

The lock uses a hook type lockbolt that engages the locking bolt. There is a spring loaded relocker inside the locking bolt that is activated when the hook becomes disengaged from the locking bolt. With the exception of the X-series doors, most single bolt Mosler lug doors (both old and new style) came with this type of relocker. There is also the thermally activated relocking bolt; just waiting for a torch attack.

When selecting a drill point for a 120 series lock you must be very precise. There are only a few places where penetration can be made without causing undue damage to the lock. For a 120 mounted LH, here are a few thoughts concerning this. First of all, unless you have a malfunction that absolutely requires you to do so, forget about drilling at drop-in (48). If you didn't hit the lever stop, you would be almost certain to drill out the lockbolt guide screw. You don't want to do that. Also, due to the construction and material the lever is made up of, drilling the fence off (as we did on the 302 lock) would be extremely difficult. The slickest place to penetrate a 120 mounted LH is at 53 x 1⅛". This is in the middle of the fence stop! The hole does not hurt it at all, and with a borescope you can watch the wheel gates line up right under the fence. To sight by eye, the area between 14 and 18 x 1" to 1-1/16" out from dial center should afford a good, unobstructed view of the wheels. This will cause slight damage to the lockbolt slide assembly, but should not interfere with the operation of the lock. The entire area between 55 and 95 should be avoided, because the spacing washers between the wheels will obstruct your view of wheels number one and number two. Remember, that we are discussing a left hand mounted lock, as is used in the new style single bolt doors. If you are working on another model Mosler safe that has a 120 mounted RH, as many old style single bolt doors do, you will need to adjust your drill points accordingly.

There are various other methods of opening these safes. Some safemen prefer to bypass the lock by drilling for the hookbolt. Others prefer to side-punch the locking bolt. Though effective, these methods have never appealed to me. I much prefer drilling under the dial to defeat the lock; not only for ease of repair, but because I feel it is the cleaner, more professional approach.

Before signing off, I would like to offer a few final comments and suggestions that may be of help to you in the future. First of all, I should point out that the two types of new style lug doors we dealt with here were standard production models. The observations and techniques contained herein apply to these doors only, not to special models that were custom ordered, or to those built for the government.

Both models in this article had MR locks in them which made identification a snap. However, in the field you will run into many doors that either came with or were converted to CD (non-manipulation resistant) locks. These do not have the characteristic features of the MR locks, but the safe identification techniques we covered should help determine which model you have. By properly identifying the safe, you can correctly identify the lock and use a professional approach that does not rely on guesswork.

I would suggest that when you encounter carbide included hardplate (Relsom is the King of this genre), you use a base plate type of drill rig. The lever rigs are great in most situations, but trying to penetrate Relsom with one is grunt labor at its worst. There are a number of base plate rigs currently available, such as the Penetrator, the Magnum 357, the Sureshot, and the electro-magnetic drill press. An alternative is to use a mini-lance. The Hot-shot and the Quick-cut are becoming very popular and will both do the job. I am planning to review a variety of Relsom penetration techniques in an upcoming issue. Stay tuned, it should prove interesting. ■

Bless my ignorant little 29-year-old heart when I wrote this article. There is absolutely no reason to drill the fence off a functional 302. If the situation is a lost combo, drill a scope hole at 60 x 1-3/8". Save the fence drilling technique for malfunctioning locks.

An (Un)Safe Opening Job

"I tried to move a very heavy safe, and to make a long story short, I dropped the darned thing on my hand! Two operations later, I have a healthy respect for the weight of a safe."

by Dave McOmie

Well guys, I have really done it. This time I literally stuck my foot, er finger in it.

As most of you know, my entire business is doing safe openings on referral. No retail store, no shop, no lockwork, no employees, and virtually no overhead. I'm what the old timers refer to as a one-horse show, and I love it.

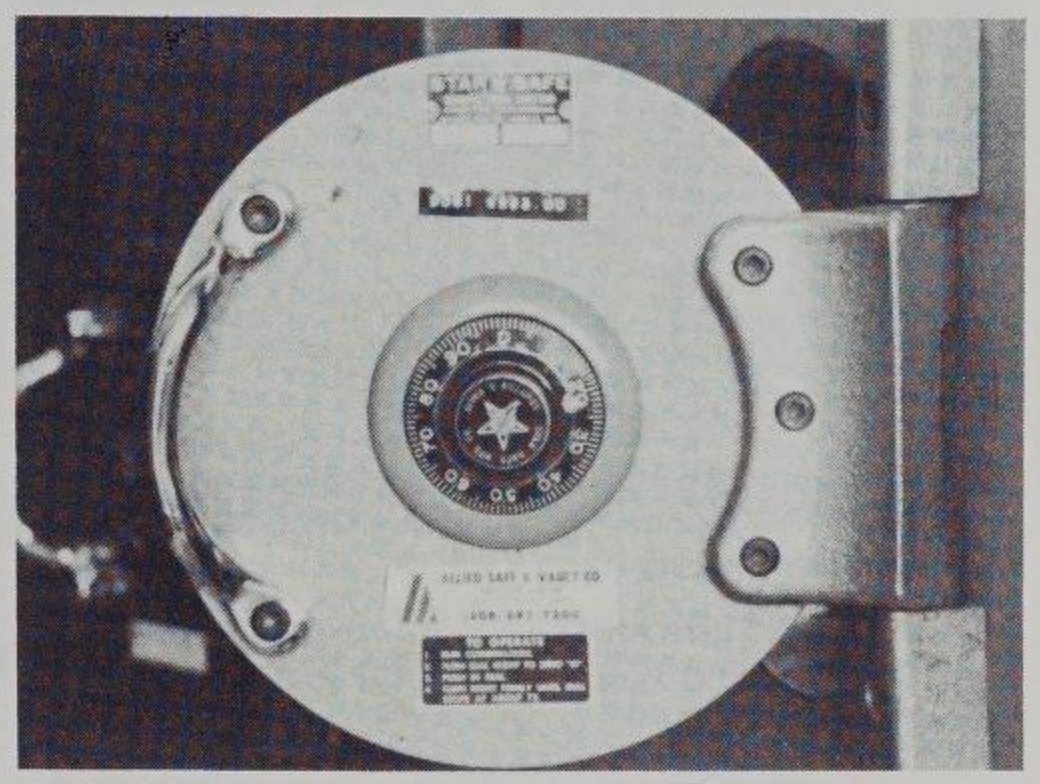
But, a few weeks ago, I ventured out of my area of expertise and tried to revive my high-school nickname. Yes sir, Dave the "Mover" took it upon himself to do what he normally reserves for the cartage companies; move a very heavy safe. To make a long story short, I dropped the darned thing and caught the ring finger of my right hand in between the safe and a 4″ × 4″ and part of it stayed there. Yow!

Sparing you the gory details, let it suffice to say that two operations and six weeks later, I am a wizened man with a healthy respect for the weight of a safe. And I'll be danged if the Doc didn't make it look pretty much like a finger again. Well, it does look like it went through a pretzel machine, but under the circumstances I am not complaining. After all, having a pretzel is better than having no pretzel at all!

During the past month, I was in no condition to wield a high speed drill. But I was capable of troubleshooting, deducing drill points, and I even learned how to manipulate backwards. I mean left-handed! Knowing that I was incapable of handling my Hornet induced me to spend considerably more time manipulating than I would have normally. I'm please to say that my success rate skyrocketed, and I feel my overall ability did also. In my case necessity was the mother of perseverance.

Of course, there were times when speed was of the essence, times when manipulation was unsuccessful, and many other times when lockouts were due to a malfunction. In these situations I was very fortunate to have the drilling services of many colleagues and former students. All those who assisted me are too numerous to name here, but they know who they are, and I want to extend a sincere thank you to each and every one of them.

The remainder of this article will be devoted to covering a few of the interesting safes, that I opened, or more correctly, helped to open during this period of injury. Two days after the accident, Les Harvey of American Locksmith Services and I went to open an old Star hinged round door like the one in photograph one. Most of these doors were 9″ in diameter and

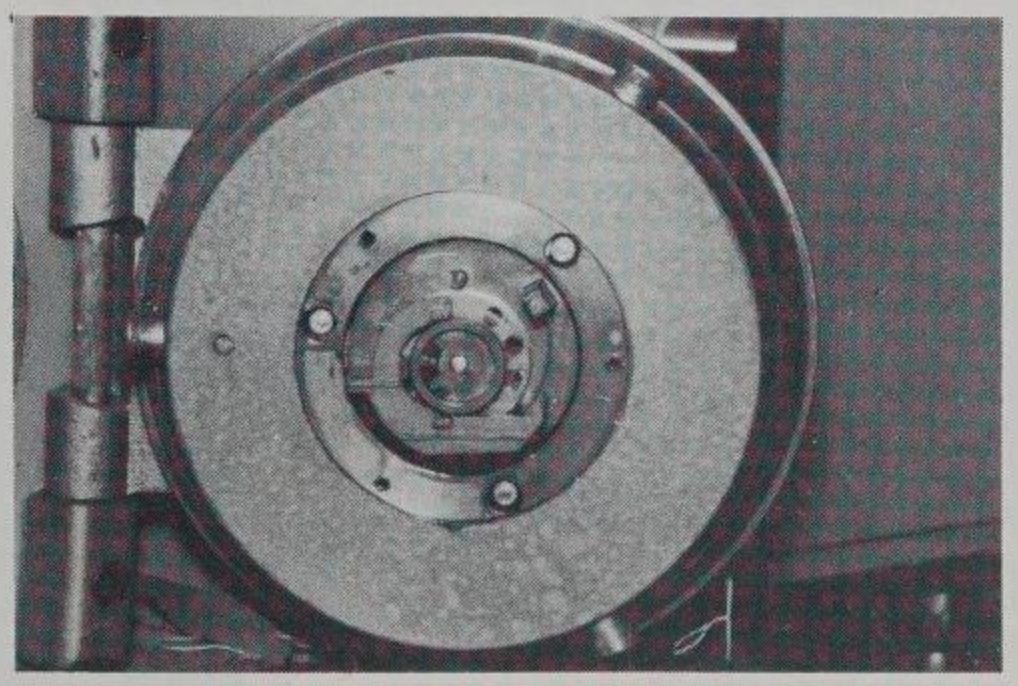


1. Old Star hinged round door.

came with a plated blue finish. There were two types. The fact that this door had a push-in dial and a serial number higher than 21821 convinced us it was the more recent of the two. These doors utilized the traditional Star MP lock with the drop-in position at approximately 28.

I backed out the screw from the center of the dial and removed it along with the dial ring. Next the drill point was marked, at 28 × 1″. Les attached his Magnum .357 drill rig to the safe and in no time at all the hole was drilled, the wheel gates lined up, and the safe was open.

Photograph two is an inside view with the back cover removed. This is a tri-bolt door with bolts at 3, 7, and 11 o'clock.



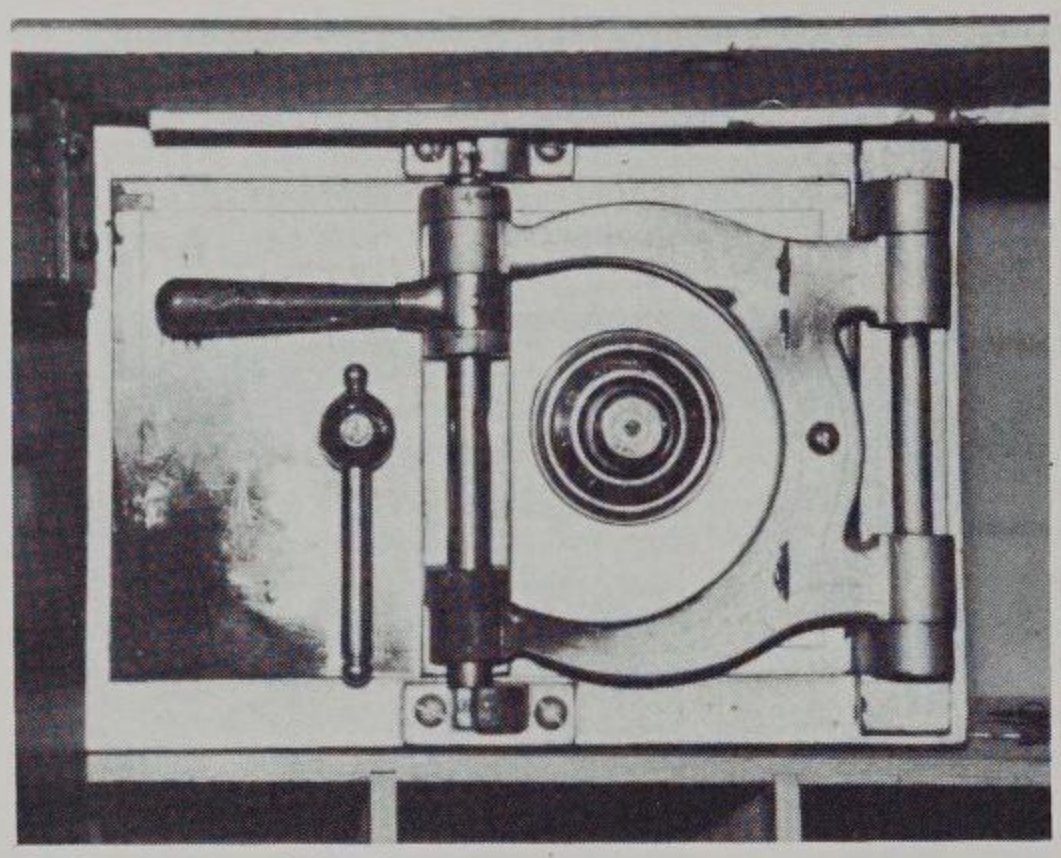
2. Inside view of safe with back cover removed.

As you can see, each bolt has its own relocker. If you ever have one to drill with the relockers set off, the drill points for them are 21, 54, and 88 × 1-13/16″.

Bill Curtis from Fox Lock and Safe down in Salem, Oregon called with an interesting opening job. He had a Mosler

jeweler's chest to open and had no information to go on. I explained my situation, and Bill said he would be happy to drill the hole if I could just show him where to drill. So I loaded up all my photographs and information on Mosler jewelers chests and headed south.

Photograph three shows the chest as it appeared when we



3. Mosler jeweler's chest.

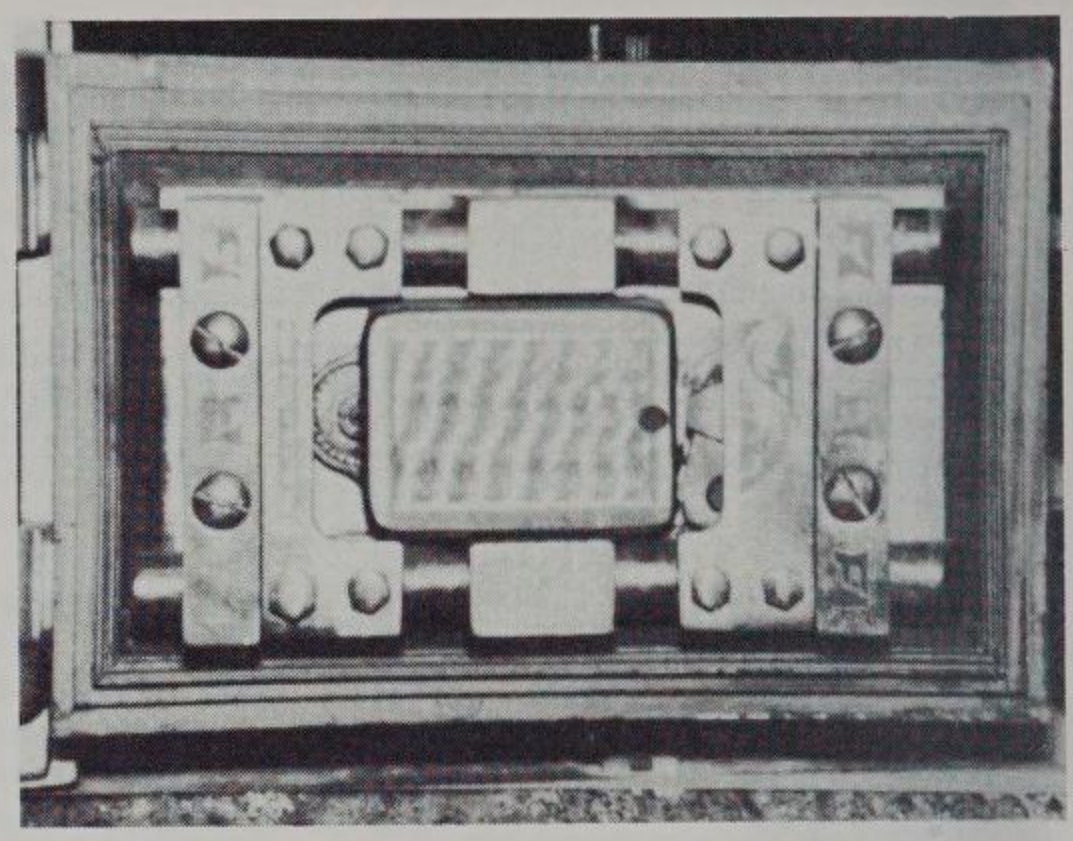
arrived. Most of their jeweler's chests came with one of three different offset locks with the no. 17 being the most popular. The offset from dial center to actual wheel center on this lock is 2″ left of the dial center, so I measured over 2¼″, and 1″ up, and marked the drill point at this spot. This put us outside the dial ring just to the right of the pressure bar assembly. The idea was to penetrate the lockcase in an open area and use a borescope to view the wheels, so Bill proceeded to drill. He went through mild steel, hard steel, mild, hard steel, and then some very hard steel. Photograph four shows him pushing on his Hornet just

4. Bill pushing on the Hornet.

prior to strapping on his drill rig. Even with the rig, it took about an hour and a dozen bits to get through the last piece of hard plate. As Bill would say, "That was some mean stuff!" Bill then looked through a borescope and lined up the gates. It was a simple matter of transferring the readings to the drop-in position, which is about 60.

Photograph five is an inside view of the door, exposing the boltwork and the roller bolt lock.

Photograph six is a close-up of the Mosler no. 17 lock with the back cover (L.O.B.C.) removed. To the left of the wheel



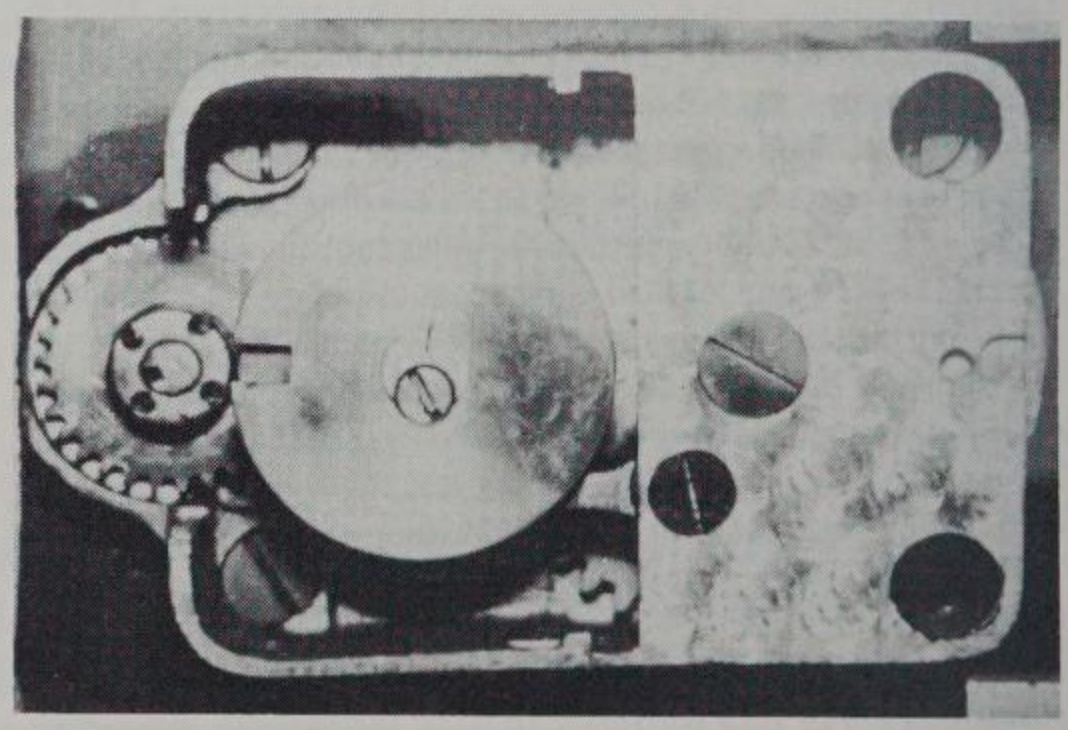
5. This is an inside view of the door, exposing the boltwork and roller bolt lock.

pack you will notice a gear. In the center of the gear is the spindle which is attached to the dial.

The next Mosler jewelers' chest I have to open will be done just a little differently. Instead of drilling above the wheels and transferring the readings, I think it would be slicker to go below the wheels and watch the gates line up right under the fence with a borescope. This will also minimize the possibility of any chips or shavings getting into the wheels.

Neal McMahon of Emergency Locksmith Services and I kept busy one afternoon. The city police had called in a panic. A burglary investigation had uncovered a drug ring, and they needed a "stash" safe opened right away.

We both dropped what we were doing and met at the site. It turned out to be hurry up and wait. Evidently all the suspects had denied any knowledge of the safe, so they called in a fingerprint technician to lift prints off the safe. But he had not even arrived, and we could not start until he was finished.



6. Close-up of the Mosler no. 17, with the back cover removed.

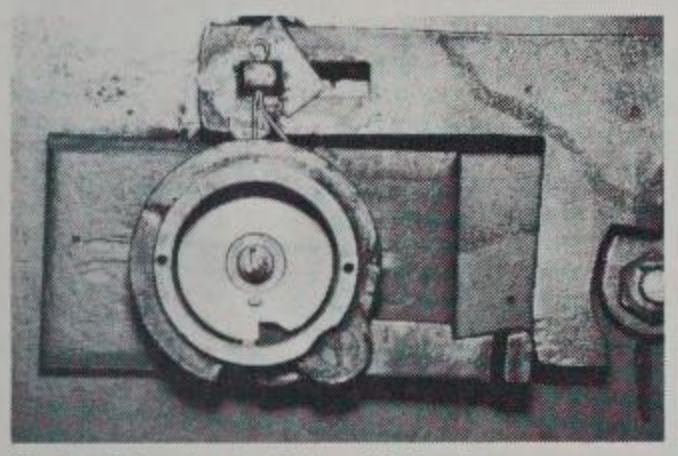
When we got back from lunch, we were escorted to the safe shown in photograph seven. It was an old Pacific Coast beauty, using the OB lock. A real piece of cake. Neal drilled above the dial ring and angled down sharply into the lockcase. He took his readings, transferred them from 0 to the drop-in position, which is 50, and the safe was open. It's always nice to look good in front of the police. Based on what we saw when the safe door came open, I would say that a couple of guys

7. An old Pacific coast safe using the OB lock.

are going up the river for a few years.

Photograph eight is an inside shot of the famous "OB" lock with the wheel pack removed.

Neal and I buttoned things up and went to open a safe for a certain branch of the military. It was another Mosler. The safe was in a garage that was cold so we decided not to waste any time. In photograph nine, Neal is drilling through the door, about 2 inches left of center and ¾" up. Next he inserted a ¼" drift punch into the hole with the tip resting against the cam. Whack! Whack! with a 2 lb. hammer and the safe was open before frostbite could set in!



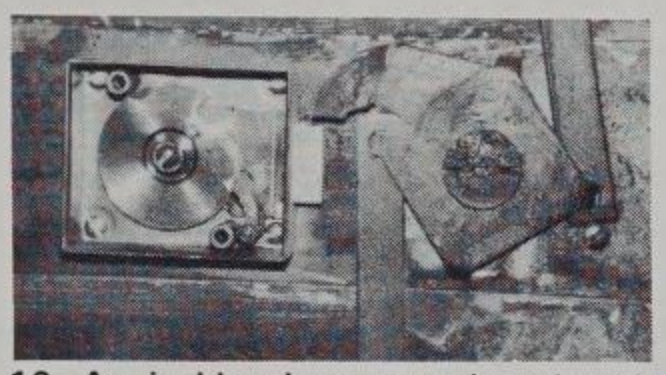
8. Inside shot of the OB lock.

9. Neal drilling through the door.

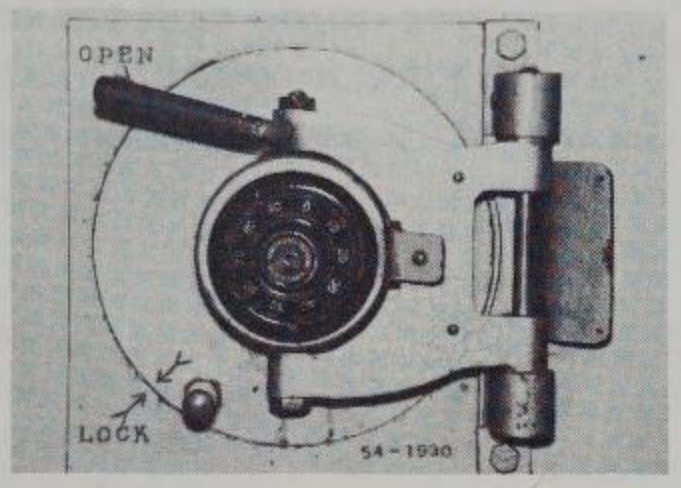
Photograph 10 is an inside view exposing the old style Mosler lock and the cam.

Ken Catchpole of Northwest Safe Co., and I went to a local armored car company to open a double door depository. After 15 minutes I was unable to detect a contact point or a gate on either door, so the determination was make to drill.

Photograph 11 is a close-up of the top door. Ken drilled, tapped and removed the dial ring. He then removed the hinge assembly from the door. Chucking a ¼ × 4" Strongarm bit into his Hornet, he easily penetrated the case-hardening at about



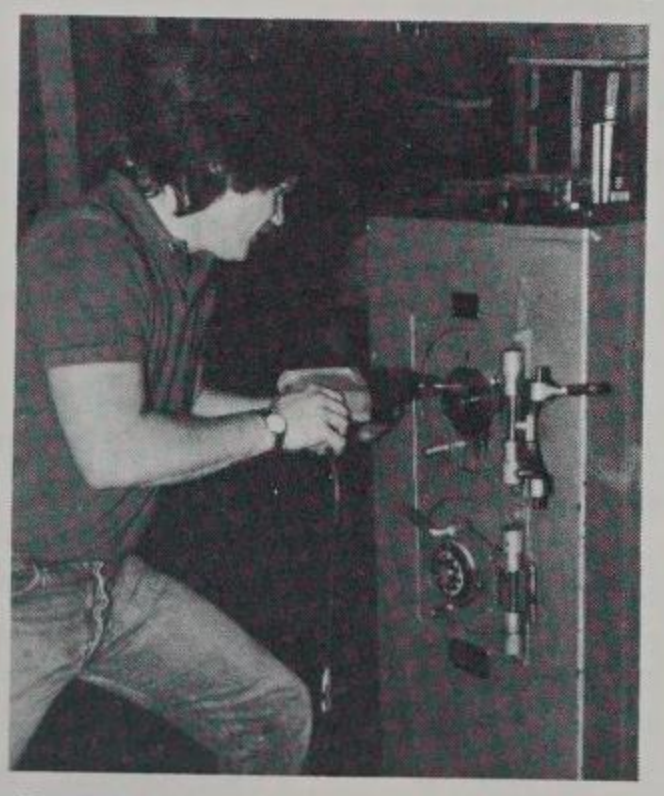
10. An inside view, exposing the old style Mosler lock and cam.



11. Close-up of the top door.

85 on the dial. He then used a hi-speed bit to drill through the mild steel and angled down slightly, aiming for edge of the wheels. The inside of the door is also case-hardened, so back in the chuck went the Strongarm bit. Using perfect back pressure Ken penetrated the lock case as shown in photograph 12, without damaging the wheels.

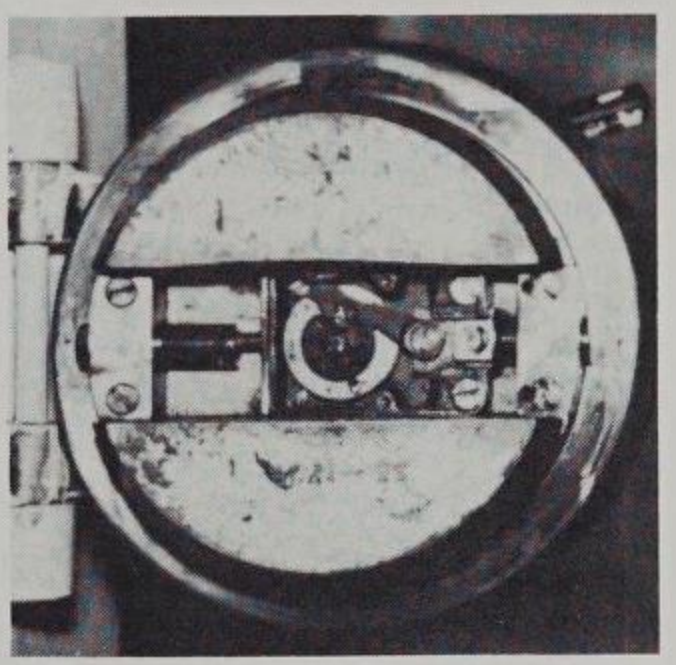
I looked in the hole with a flex light, and it was perfect. I lined up the wheel



12. Penetrating the lock case.

gates, transferred the numbers with my Dib's tool, and presto, she was open.

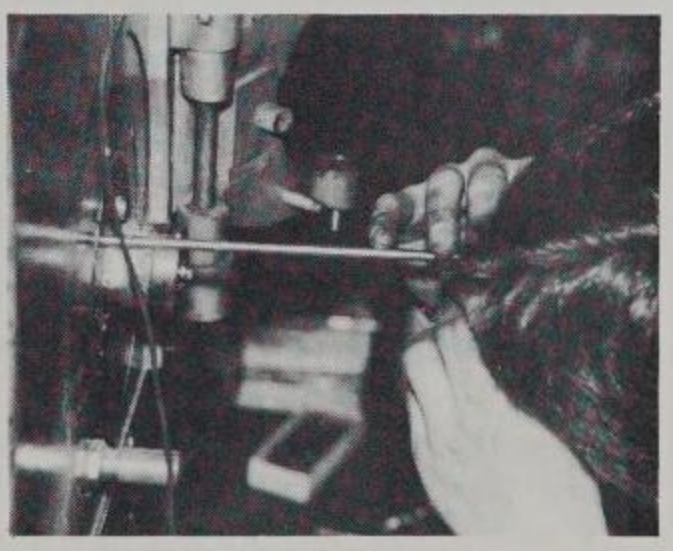
Photograph 13 is an inside shot with the big steel back plate and back cover removed. The lock is an old S & G M6730 that is mounted RH. On the left is the relocking bolt that is held in check by a pin on the back cover.



13. An inside shot with steel back plate and cover removed.

On the lower door we decided to be a little more conservative. Drilling for the wheels was fine, but there was the risk of doing undue damage to the lock. This would be costly. Retrofitting a modern day R6730 to a Hermann C door that used an old style M6730 is no easy task. The M lock has a case width of 2¼" and fits very tight in the Hermann. The R lock has a case width of slightly more than 2⅜", and will not fit at all without grinding the case paper thin or milling the door.

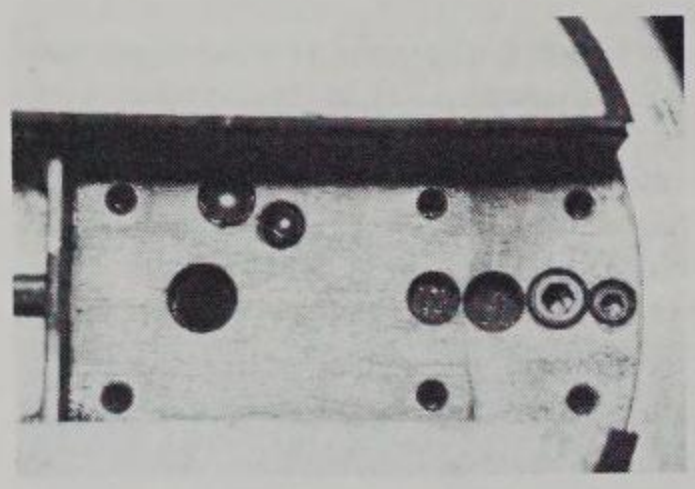
To avoid this possibility, I had Ken drill in the same spot as before, but straight in instead of at an angle. In photograph 14, Ken is looking in one of my scopes, lining up the gates right under the fence shortly before he opened the safe.



14. Lining up the gates, before opening the safe.

Some of you are probably wondering why we didn't just drill right at the drop-in area. This is a good question that photograph 15 should answer.

In this photo we are looking at the inside of the door with the lock removed. The large, ½" ball bearing that the arrow is pointing to is what you will hit if you



15. The inside of the door with the lock removed.

drill at drop-in. Not all Hermanns have this feature, but on this particular day I just was not in a gambling mood.,

The smaller ball bearing just below and to the right of the big one is the inside repair of the hole Ken drilled. The next guy who drills this door is in for a real treat!

Hermann was really ahead of his time. Also visible in this picture are four holes side by side, underneath where the locking bolt travels. You will notice that two of these are filled with hardened allen screws. Well, originally all four holes had hardened screws in them to resist a bolt drilling attack and that's not all! If you were to stick your finger in the bolt hole receptable, chances are you would feel an extra large ball bearing that was put there to resist side drilling attacks to punch the bolt. I should add that there is no ball bearing protecting the relocking bolt; you are safe to side drill for it.

These were well thought out safes. The only real recurring problem I have had with the Hermann's is the hinge assist spring on the vertically mounted doors.■

This event gave me a healthy respect for the weight of a safe, and for the skills possessed by professional riggers. I haven't attempted to be Dave The Mover since. One drill point improvement: I no longer angle drill OB locks above the dial ring and transfer to drop in. I drill straight in, either through or just outside the dial ring at 46-1/2. Look up with a good scope and you will see the wheels and the fence.

Mosler X-Series Lug Doors

"The basic difference in design between the X-series and the hookbolt doors is how the connection is made from the lockbolt to the locking bolt."

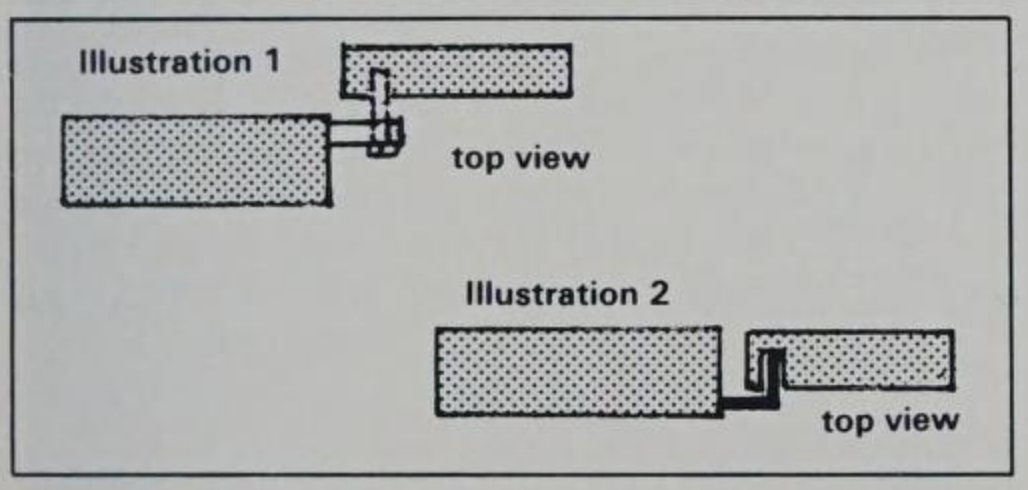
by Dave McOmie

In the January issue we covered what I call Mosler's "new style" lug doors. Many of you responded quite enthusiastically and requested a follow up article on the "old style" lug doors. I have divided these doors into two groups, and will cover them in a two-part article.

This month we will cover Mosler's X-series lug doors; next month we will cover the more popular "hookbolt" doors.

At the outset I should make clear the distinction between X-series and hookbolt doors. The basic difference in design is how the connection is made from the lockbolt to the locking bolt. The X-series doors use a solid lockbolt with a threaded hole in it, which accepts a screw that engages the locking bolt. (*See illustration 1.*)

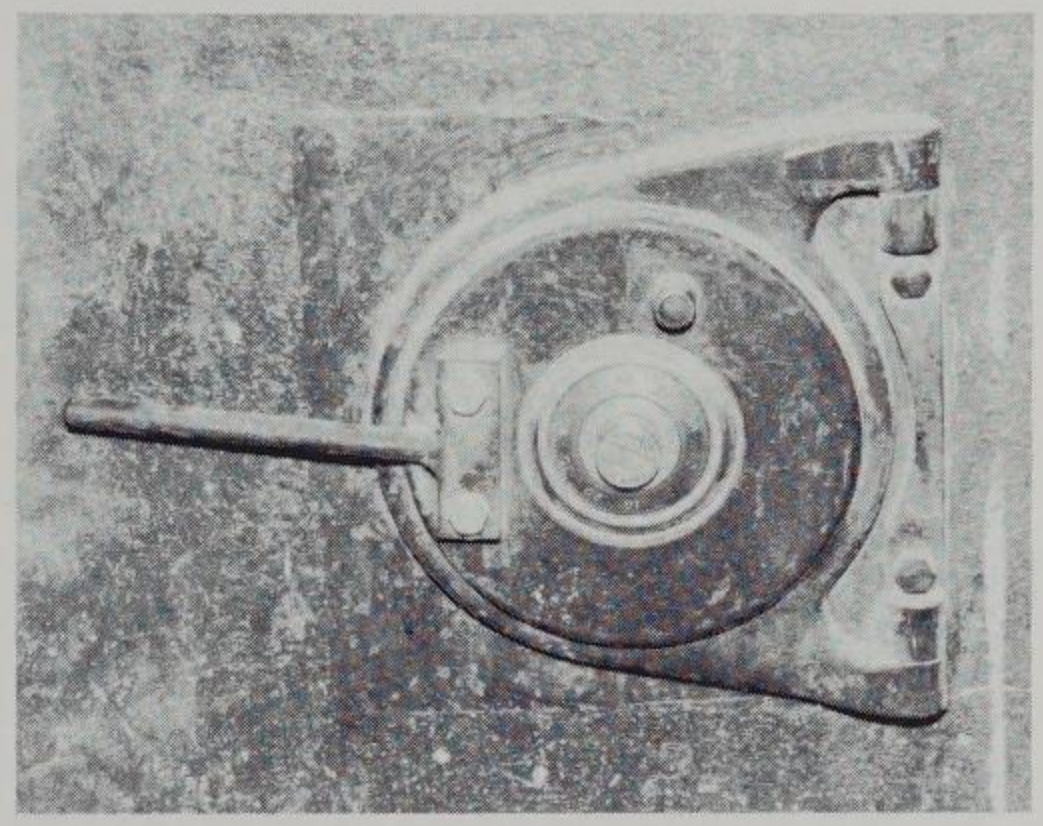
The hook bolt doors use a hook type lock bolt that hooks into a slot in the locking bolt. (*See illustration 2.*)



Photograph three is a front view of an X-series door that I just opened yesterday for Neal McMahon of Emergency Locksmith Services. The original handle had long ago been replaced with a homemade one, but everything else was original.

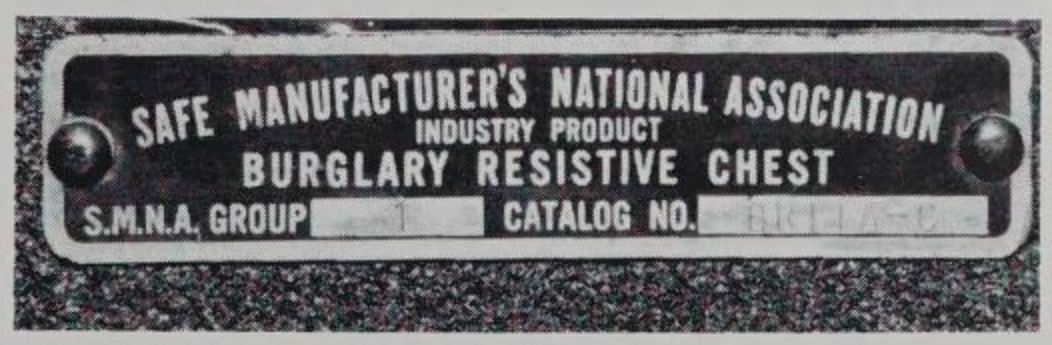
Before we go any further, I have a confession to make. I did not recognize this as an X-series door until a (wrong) hole was drilled in it, but don't tell anyone, OK?

There are two things I generally look for that help distinguish an X-60 from a hookbolt door. (Remember now, the safe is locked, so looking at the lockbolt to locking bolt connection is not an option.) This one is a dead giveaway. Most of these doors will carry the obsolete U.L. X-60 label somewhere on the upper right part of the hinge. (*See photograph 4.*) Some will also carry the old S.M.N.A. label shown in photograph five. The other thing I have noticed about these doors is that some of them



3. X-series door, front view

4. Obsolete U.L. X-60 label.



5. Old S.M.N.A. label.

protrude from the safe body a little farther than do their hookbolt counterparts.

Had I looked carefully, I would have noticed the spot where the label used to be, but I didn't, and made an honest error in drillpoint deduction. Assuming it was a hookbolt door with more than likely a B-101 series lock, I measured over 2″ LC and ⅜″ up. The hole would be under the handle which would make repair a cinch.

So I removed the handle and drilled my hole through the door, expecting to come out right where the hook engages the locking bolt. The depth of the hole had made me a little suspicious, and looking in with my flex-light confirmed my fears. I was staring not at the hookbolt, but at the middle of a straight, solid lockbolt. The technique of drilling for the hook will be explained next month.

Anyway, since this was not a removable or pullable dial, I drilled a hole through the dial ring at an angle into the lockcase, and transferred my numbers to drop-in. My drill angle was a little too sharp, and the hole came through at the very bottom of the gates.

Coming out at the bottom of the gates on a rear drive lock is alright because the wheel nearest you is the first number of the combination. Just line up the gates as you see them and you have a set of numbers to work with. But the lock I was working with, like most Moslers, drives from the front. Since I could not see over the top of the wheels to line up the gates in proper sequence, a kind of reverse procedure was used, which can really try a person's nerves.

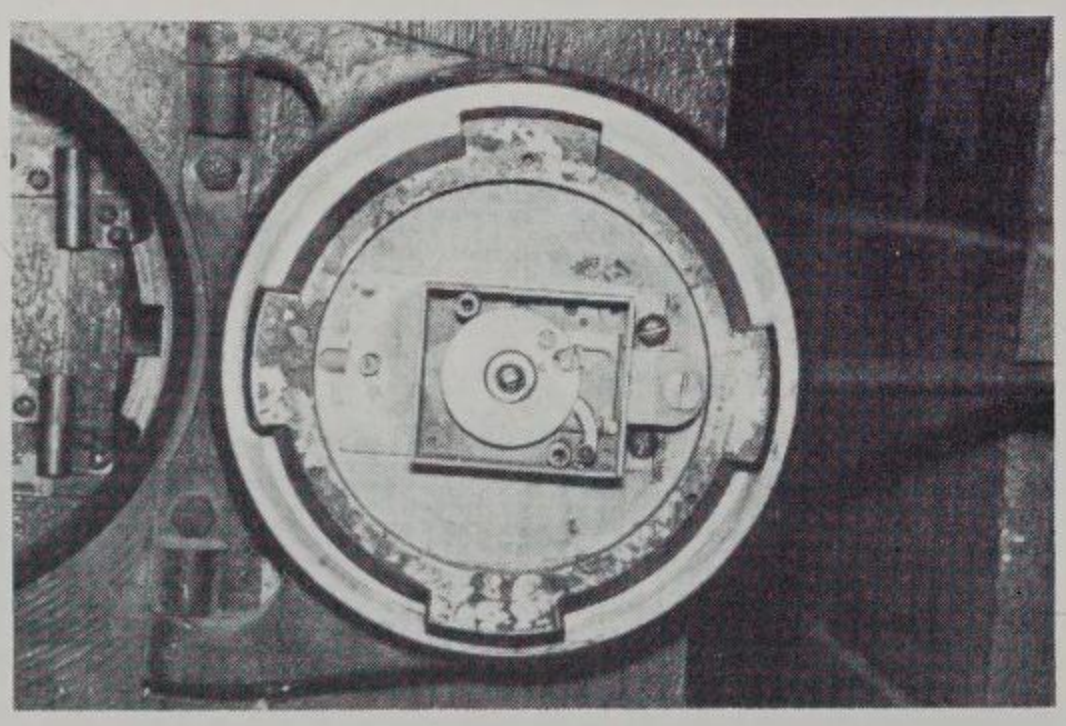
In this procedure the driver gate is lined up first, and the corresponding number is recorded. Then the wheels are moved every 5 numbers, followed by a return to the driver gate to see if wheel gate #3 can be seen. When this gate is lined up and the number recorded, dial rotation is reversed as you begin the hunt for wheel gate #2, and so on until you have all the gates lined up, giving you a set of numbers which then need to be transferred to the drop-in point.

This procedure can be very tedious on a four wheel lock, and is not recommended for those who are overly impatient or easily angered.

But, if counting dial rotations and keeping numbers straight does not bother you then give this technique a shot before you try to enlarge and re-aim your hole.

This is an important technique to learn, and will bail you out of a jam someday; its just one of those things that has to be learned on the job before it will sink in.

Photograph six is an inside view with the back plate and back cover removed. The lock is a Mosler KCB-107, with the driver



6. Inside view of a Mosler KCB-107.

in front, and the three 2" wheels mounted on the back cover. Notice there are no mounting screws in the lockcase. The lockcase is attached to a mounting plate which is in turn attached to the door with two large screws.

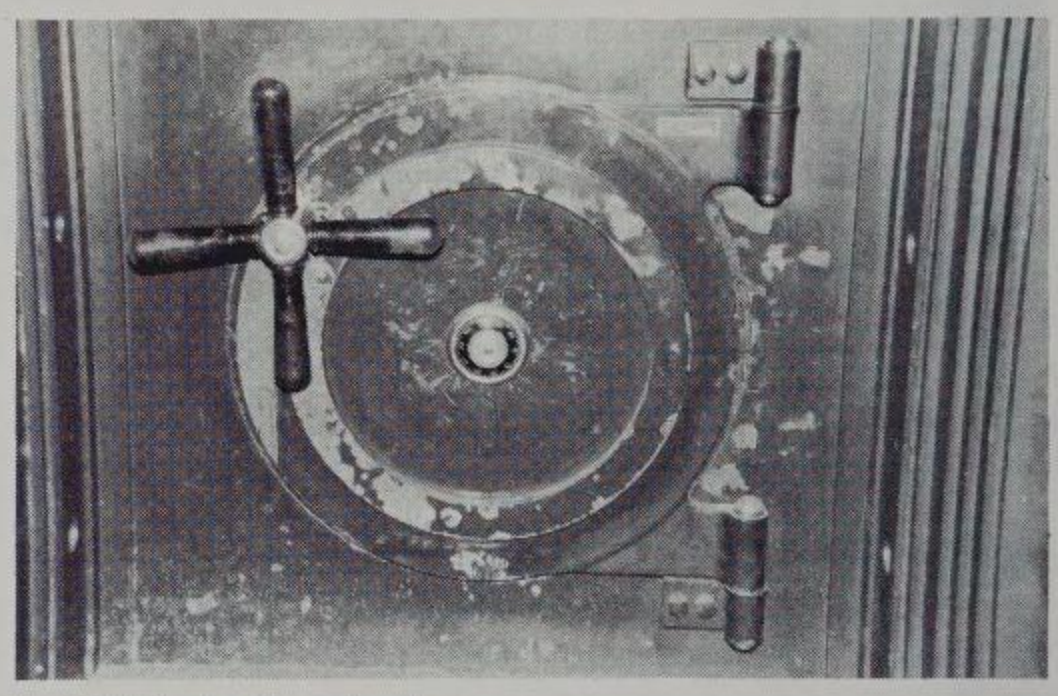
This door is a little unusual in that the relocking bolt has a screw in it which is held in check by the mounting plate. Punching the spindle may or may not set the relocker off, depending on how far the mounting plate bent before the back cover popped off. Usually, the relocker is held in place by a pin extending from the back cover, as we will soon see when we look at a few more safes.

Another characteristic feature of the X-series doors is that the locking and relocking bolts are practically hidden from view; even from the inside. The channels they travel in are almost enclosed. On the inside of the door there is only a small slot for linkage connections to both bolts.

Here are the critical specifications for this door:

DOOR THICKNESS TO LOCK: 2¾"
DOOR THICKNESS TO BOLT CENTER: 1⅞"
TYPE OF LOCK: Mosler KCB-107 w/extension bolt
DROP-IN POINT: 70
DRILL POINT: I drilled through the dial ring at 67, but 95 is actually a better drill point. Two alternatives would be to side punch the locking bolt, or to drill out the screw and pry the locking bolt back.
RELOCKER DRILL POINT: 3" RC, pry relocker back or side drill and push it in.
HANDLE ROTATION: Clockwise

Photograph seven is of a very old Mosler X-series door. Notice the label on the upper right side of the hinge. (Those of you whose first reaction was HHM are not alone; mine was also).



7. Old Mosler X-series door.

In photograph eight the large back plate has been removed. With the lockbolt and relocking bolt out of sight, it sure looks empty in there doesn't it? The long back cover of the lock is about all we can see.

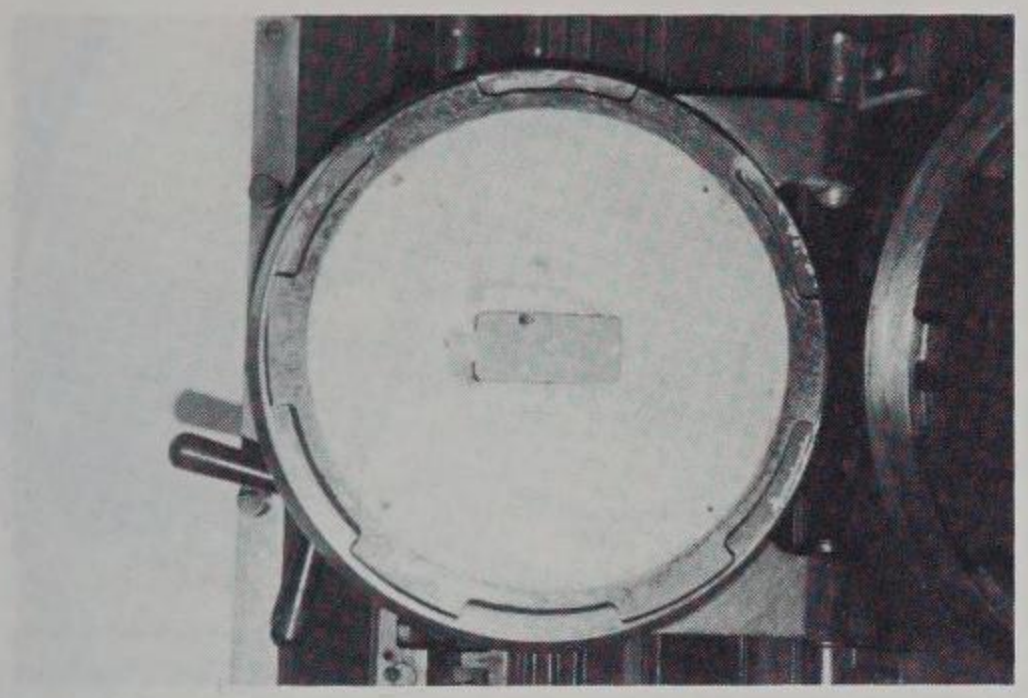
Photograph nine is a close-up with the back cover removed and resting comfortably atop the lock. The pin on the the left side of the back cover is the relocker detent. The lock itself is a Mosler #1, which is very similar to the Yale OC-5. The driver is in front and there are three 1⅞" diameter hand change wheels. I have often wondered if Yale made these locks for Mosler. If any of you know the history of this lock please drop me a line.

Specifications:
DOOR THICKNESS TO LOCK: 2⅝"
DOOR THICKNESS TO BOLT CENTER: 2⅛"
TYPE OF LOCK: Mosler #1, w/extension bolt
DROP-IN POINT: 80
DRILL POINT: Dial is removable (take out the screw) drill at 85 × 1-1/16, transfer to drop-in. Alternatives — side punch, or drill out the screw and pry the locking bolt back.
RELOCKER DRILL POINT: 3" RC, pry relocker back or side drill for it.
HANDLE ROTATION: Counterclockwise

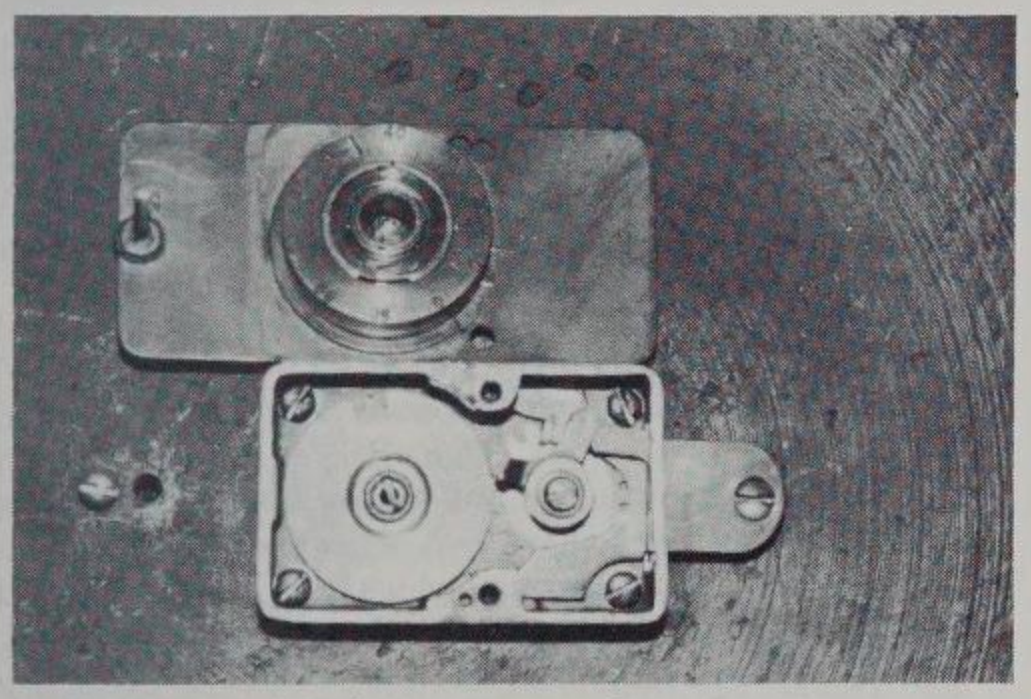
The safe in photograph 10 is a large one. Once again, take note of the label in the upper right portion of the hinge.

In photograph 11 we see something that is rare for an X-60. The locking bolt and relocking bolt are both visible.

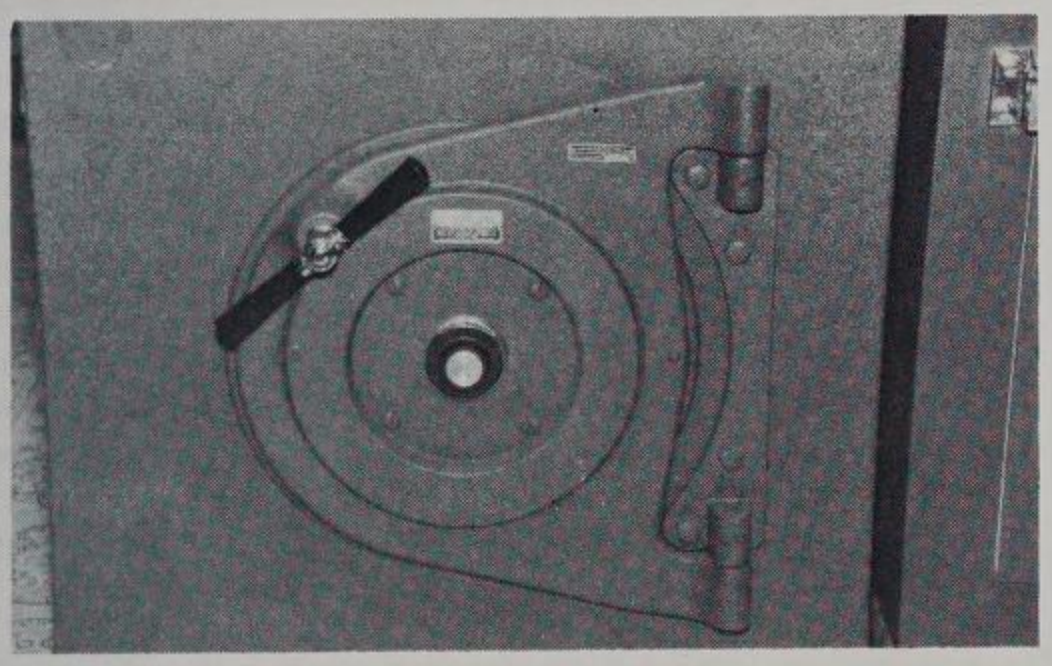
Photograph 12 is a close-up of the lock. Though there has been extensive modification inside this safe, I included this photo to show you the MRK-120 (manipulation resistant key change) lock. This was the last lock to be stock equipment on the X-series doors before Mosler discontinued them sometime



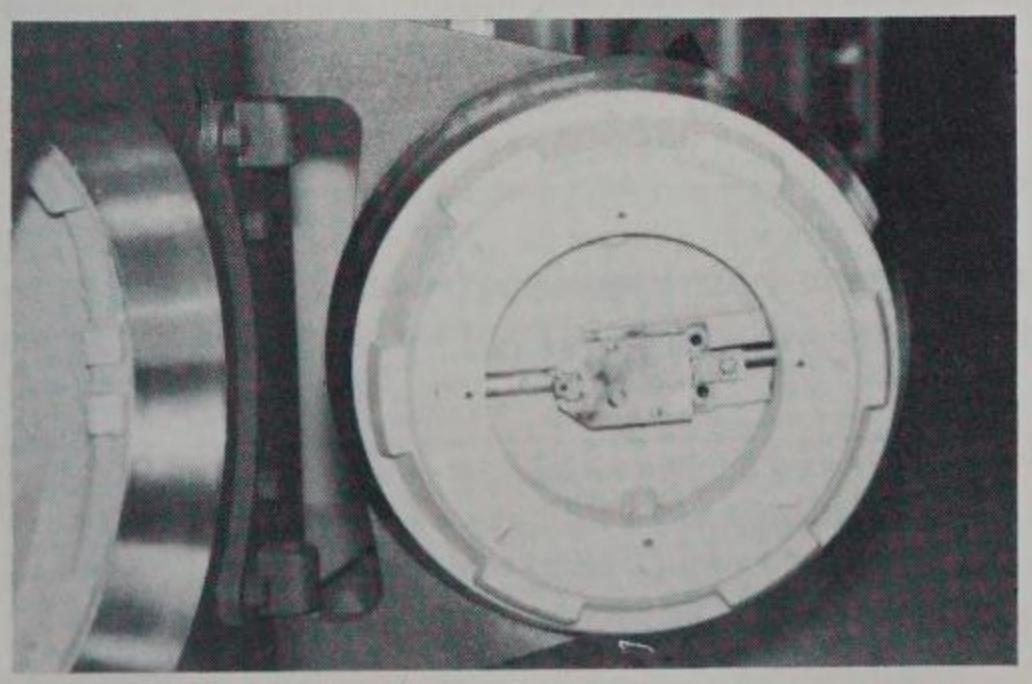
8. Old Mosler with the back plate removed.



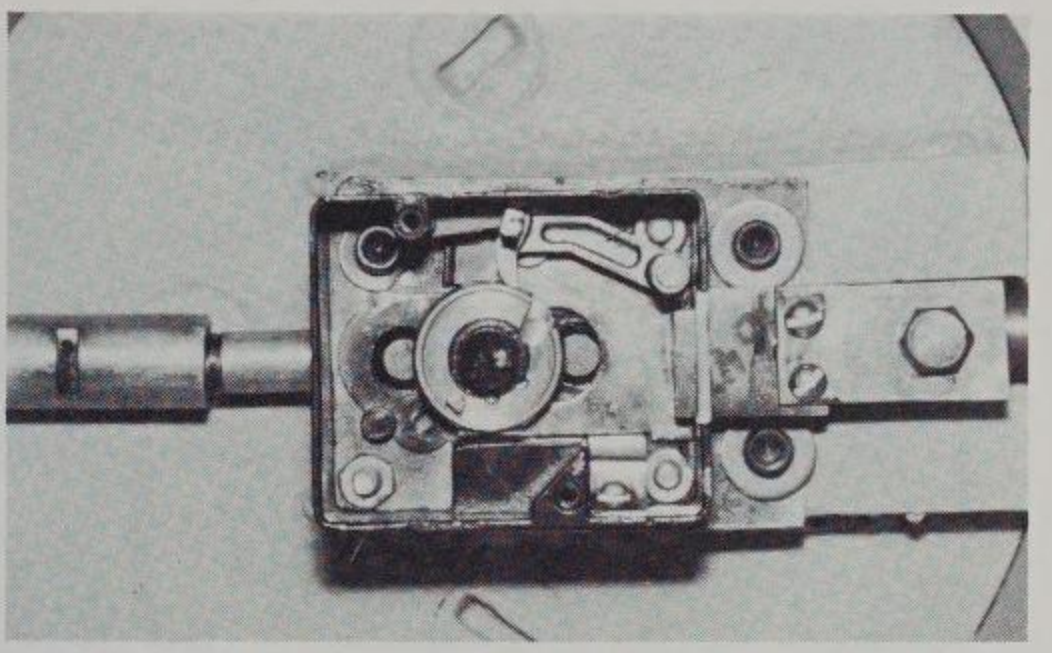
9. Close-up with back cover removed.



10. Large X-60 safe. Note label on right hand side.



11. Locking and relocking bolts are both visible.



12. MRK-120 manipulation resistant key change lock.

in late 1961.

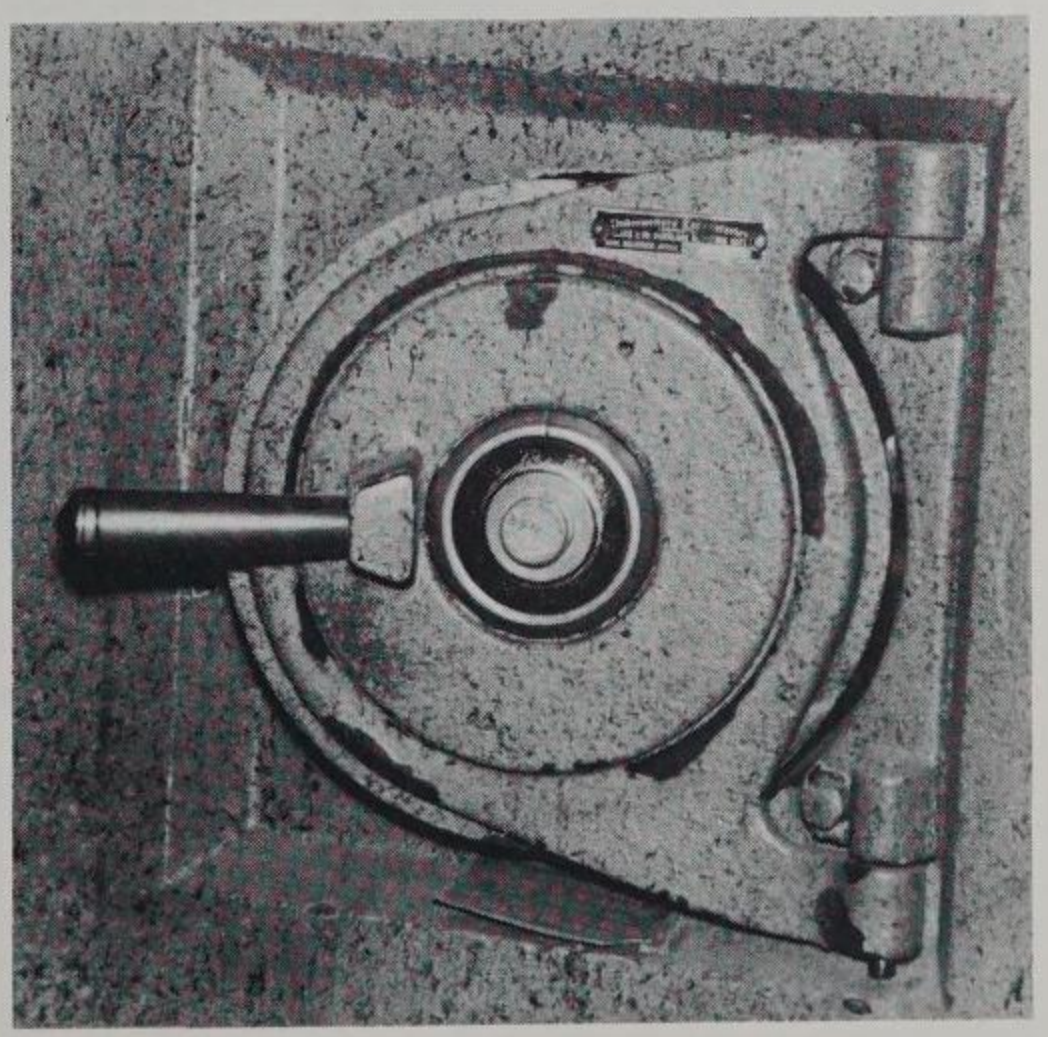
If you look closely, you will see that the gate is only cut halfway through the driver. After dialing the combination, you must return to zero and pull the dial out about ¼", which allows the lever to drop-in.

Specifications:

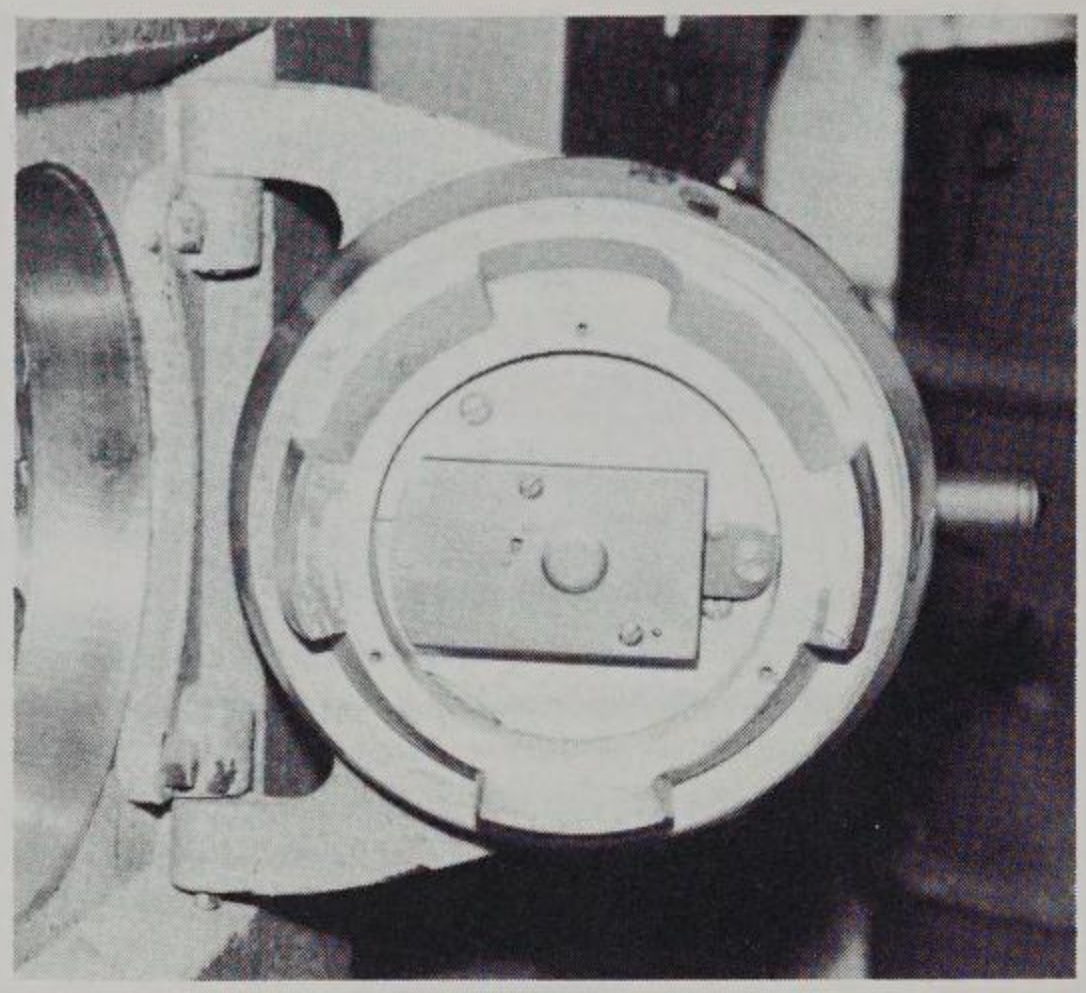
DOOR THICKNESS TO LOCK: 4"
DOOR THICKNESS TO BOLT CENTER: 3⅞"
TYPE OF LOCK: MRK-120
DROP-IN POINT: 98
DRILL POINT: Since this safe has been retrofitted with a (pullable) new plastic dial, I would drill at 3 × 1⅛ and use a borescope. An alternative would be to side punch the locking bolt.
RELOCKER DRILL POINT: 3" RC, pry relocker back; or side drill.
HANDLE ROTATION: Counterclockwise

In photograph 13 we see our last X-series door for the day. Once again take note of the X-60 label in the upper right of the hinge.

Photograph 14 is a rear view with the back plate removed. We can see the large back cover that has the relock detent attached to it. We can also see the lockbolt with the screw going through it. The two large screws (one above the lock, the other just below the lockbolt) attach the hardplate to the door.



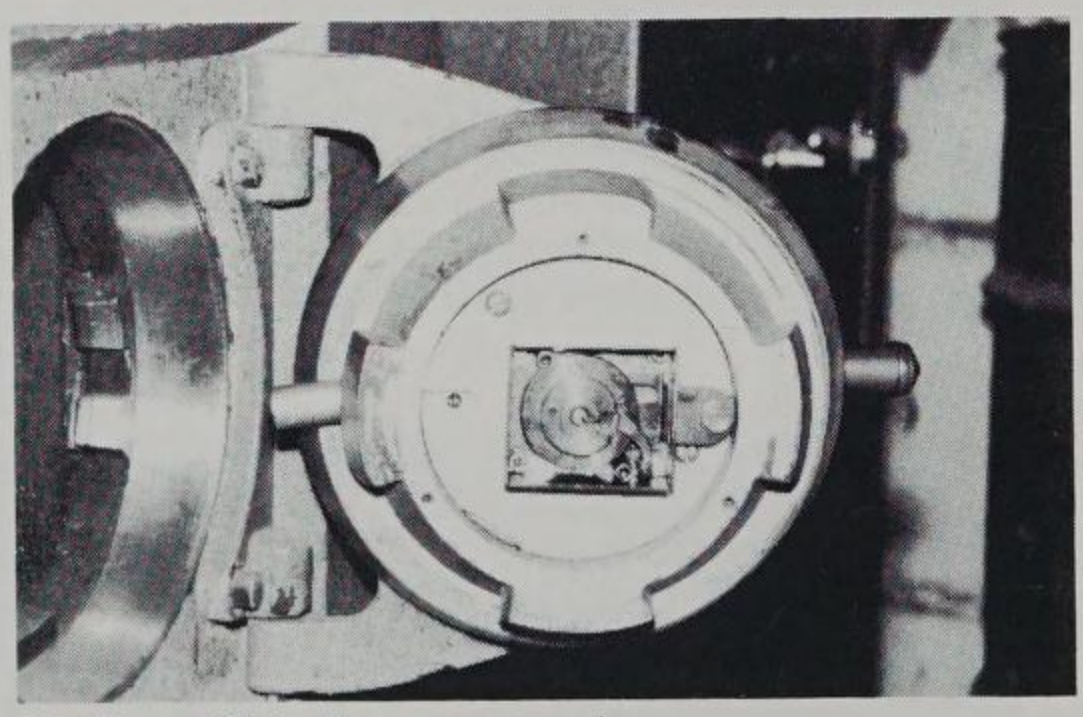
13. Mosler X-series safe.



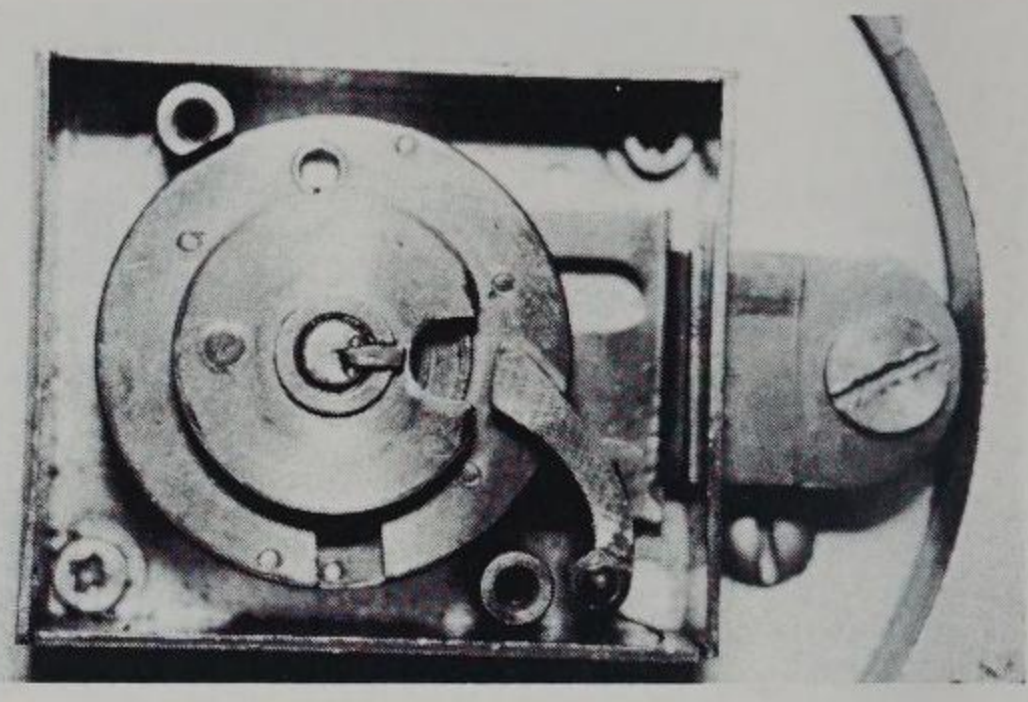
14. Rear view with back plate removed.

In photograph 15, the back cover has been removed, setting off the relocking bolt, which can clearly be seen at the left of the picture. Also visible to the left of the locking bolt is the lug with the slot in it, which would receive the relocking bolt if the door were closed.

Photograph 16 is a close-up of the lock. This is Mosler's KCB-101. There are three 2″ diameter wheels and the driver is in back. Through there are four mounting holes in the lock, Mosler chose to utilize only two of them (upper right and lower left).



15. View with back cover removed.



16. Close-up of Mosler's KCB-101.

Specifications:
DOOR THICKNESS TO LOCK: 2¾″
DOOR THICKNESS TO BOLT CENTER: 1⅞″
TYPE OF LOCK: Mosler KCB-101 w/extension bolt
DROP-IN POINT: 70
DRILL POINT: Dial is removable, drill at 95 × 1″ transfer to drop-in. Alternatives: drill out the screw and pry the locking bolt back, or side-punch.
RELOCKER DRILL POINT: 3″ RC and pry back the relocker or side drill.
HANDLE ROTATION: Clockwise

In concluding, I would just offer a few comments and suggestions. When and if you have an X-series door to open, the first thing to do is try and determine which lock lies behind the door. It has been my experience that the overwhelming majority of these doors came equipped with either a KCB-101 or KCB-107. Running far behind these is the MRK-120. Remember also, the pull-out dial gives this one away.

Don't be surprised if you run across an old Mosler safe with an S&G dial on it. The odds are heavily in favor of a Mosler lock being inside. Since the spindle threading is the same (5/16 × 40), you will see many S&G dials with the spline keyway enlarged to accept a Mosler spline key. I am not condoning or condemning this practice, I am simply saying that it does occur often.

As for ease of drilling, I can say that I have drilled open at least a half dozen X-series doors in my time, and not one of them had tough hardplate. Just remember that if you are going through the dial ring do not overdo the angle; these are thick doors.

Well, that about wraps up the X-series. See you next month with our discussion of the hookbolt doors. ■

The X-60s were monsters, built like brick you-know-whats.
And Moslers were the scariest X-60 monsters of all.

Servicing Mosler Lug Doors

"This month we will cover the hook-bolt doors. There were nine different locks used in these doors over the years. We will cover most of them here."

by Dave McOmie

Well, here we are, at the second installment on old style Mosler lug doors. But before we get into the nuts and bolts of these circular works of art, I would like to answer a question that has popped up in my mail.

In the January issue of *The National Locksmith*, I stated that many safemen trade pictures and information. Several of you have inquired whether that included me. The answer is — heavens to murgatroid, yes! I am involved in swaps every week with several dozen safemen from all over the country (and a couple from outside the country), and am always ready to meet new friends. You can contact me by mail through this magazine. Thanks for asking.

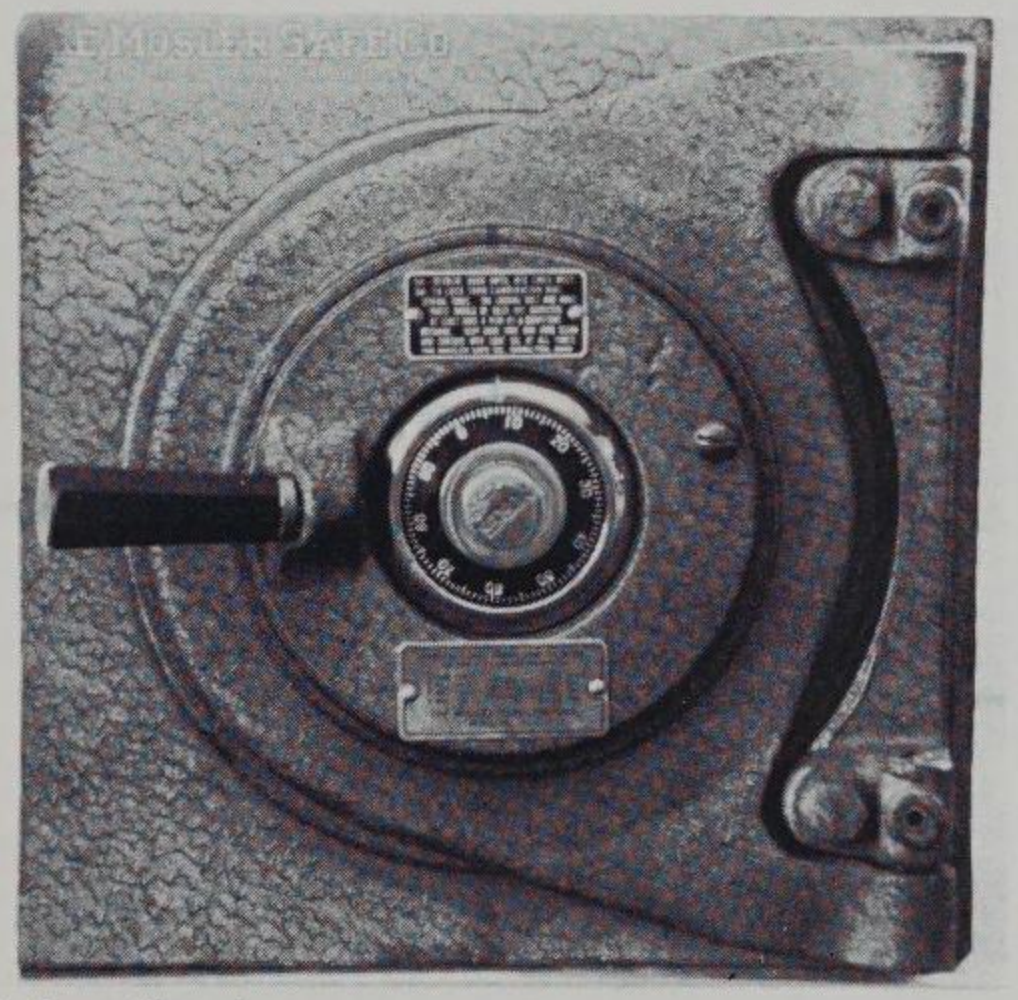
Last month was devoted to the X-series doors; this month we will cover the hookbolt doors. As you will remember, the principle difference between the two types is the connection from lockbolt to locking bolt. The X-series doors use a solid lockbolt with a screw type connection; the hookbolt doors use a "hook" type lockbolt (hence the name). Also, most X-series doors use 4 wheel locks; most hookbolt doors use 3 wheel locks. On this note I should make a correction. The lock identified as a (3 wheel) KCB-101 in last month's article, is actually a (4 wheel) KCB-401. Sorry about that.

In the hookbolt doors there were nine different locks used over the years. These were the MR-98; MR-99; B-101; KCB-101; R-101; R-104; RB-104; KCB-107; and the 120 series locks. We will cover the three locks that were used in the great majority of these doors. We will also cover the most popular of the "uncommon" locks. After a general discussion of four safes, we will get into specific opening techniques. Fair enough? Let's dive in.

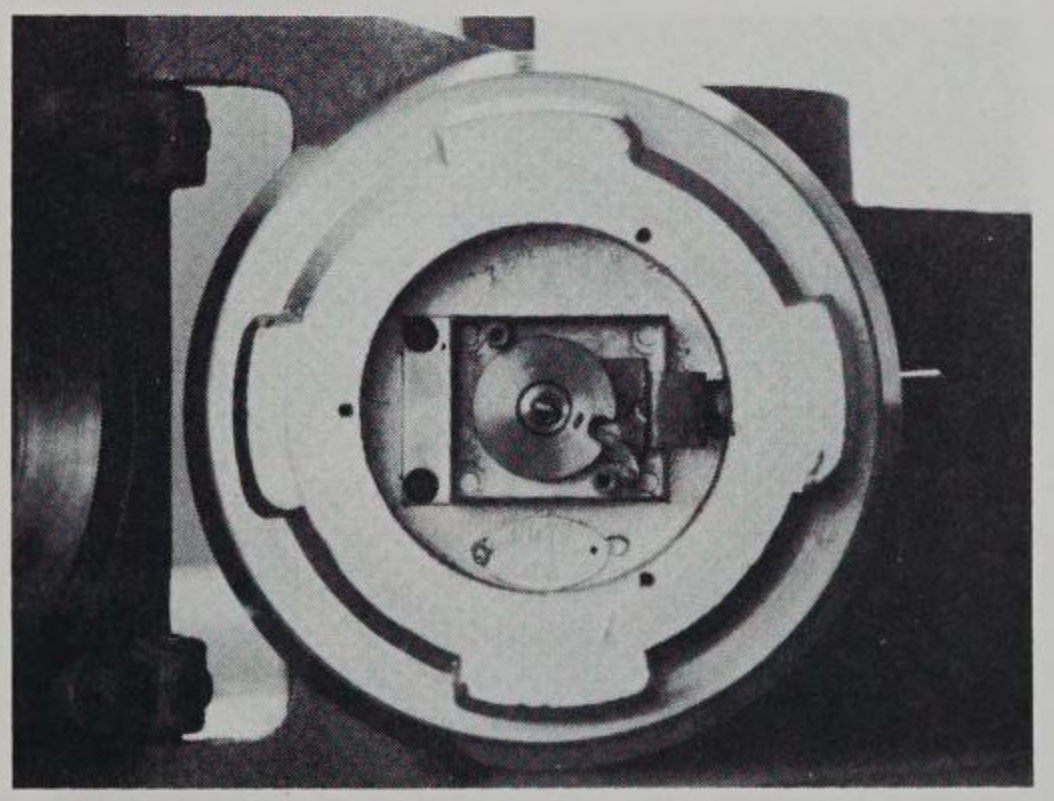
Photograph one is of a small lug door, typical of many you will encounter in the field. Identifying the door and its corresponding lock and internal configuration is done in three steps: 1) The thickness and shape of the hinge tell us instantly that this is an "old style" door (as opposed the the "new style" doors covered in January).

2) The absence of an X-60 label, combined with the knowledge that hookbolt doors outnumber X-series doors at least 10 to 1, leads us to the reasonable conclusion that we are dealing with a hookbolt door.

3) The presence of the old style black and white front reading dial indicates a pre-1958 door. In these doors the B-101 and the KCB-107 were by far the most commonly used locks.



1. A small lug door.



2. Rear view with back plate and cover removed.

Photograph two is a rear view with the back plate and back cover removed. The lock, sure enough, is a B-101. Notice how it is attached to the door. There are only two mounting screws used, which hold the mounting plate (with the lock attached to it) onto the door. There are no mounting screws inside the lockcase. We can also see the hookbolt and part of the locking bolt.

3. Locking bolt with hook removed from the slot.

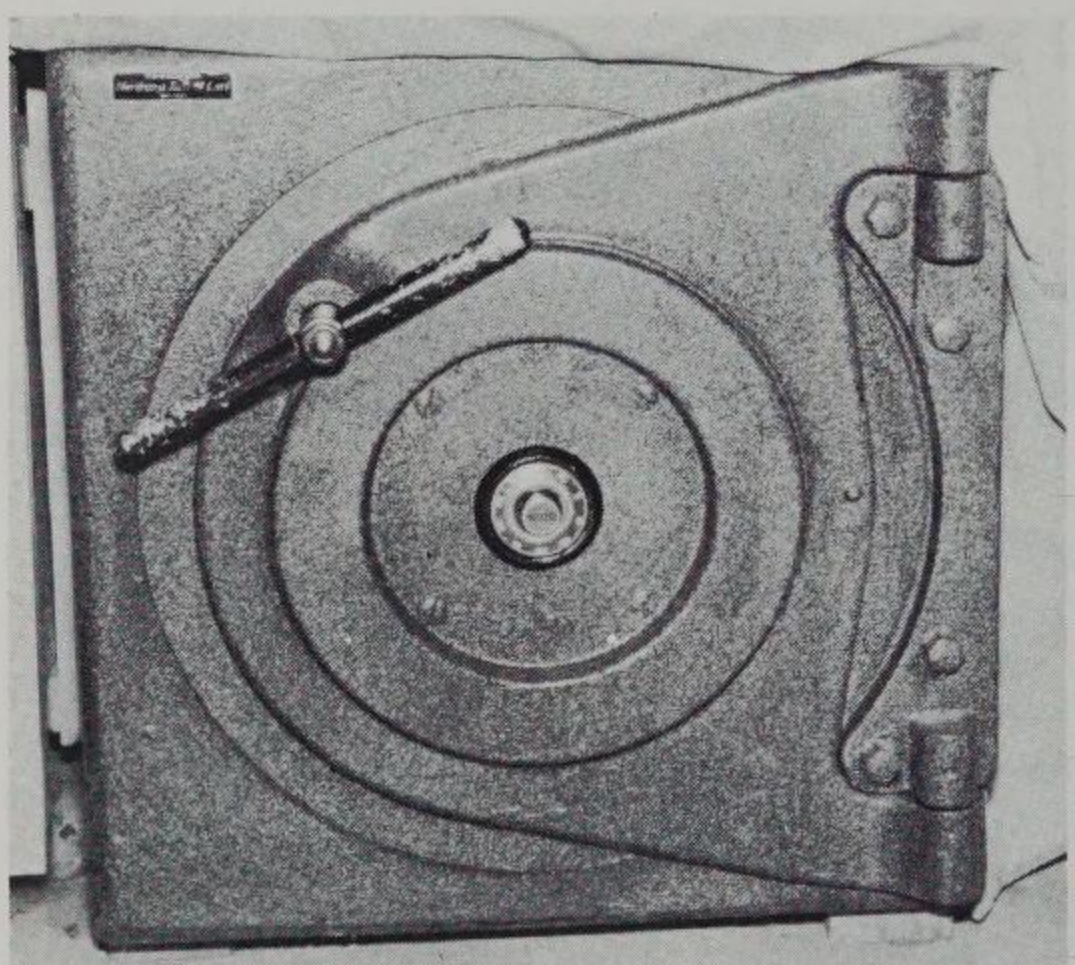
Photograph three shows the locking bolt with the hook removed from the slot. The spring pushes the relocker out of its hiding place, and holds the bolt in the extended position. This device is unique to Mosler, and is very effective, provided the stop pin has not been removed.

Here are the specifications for this door:

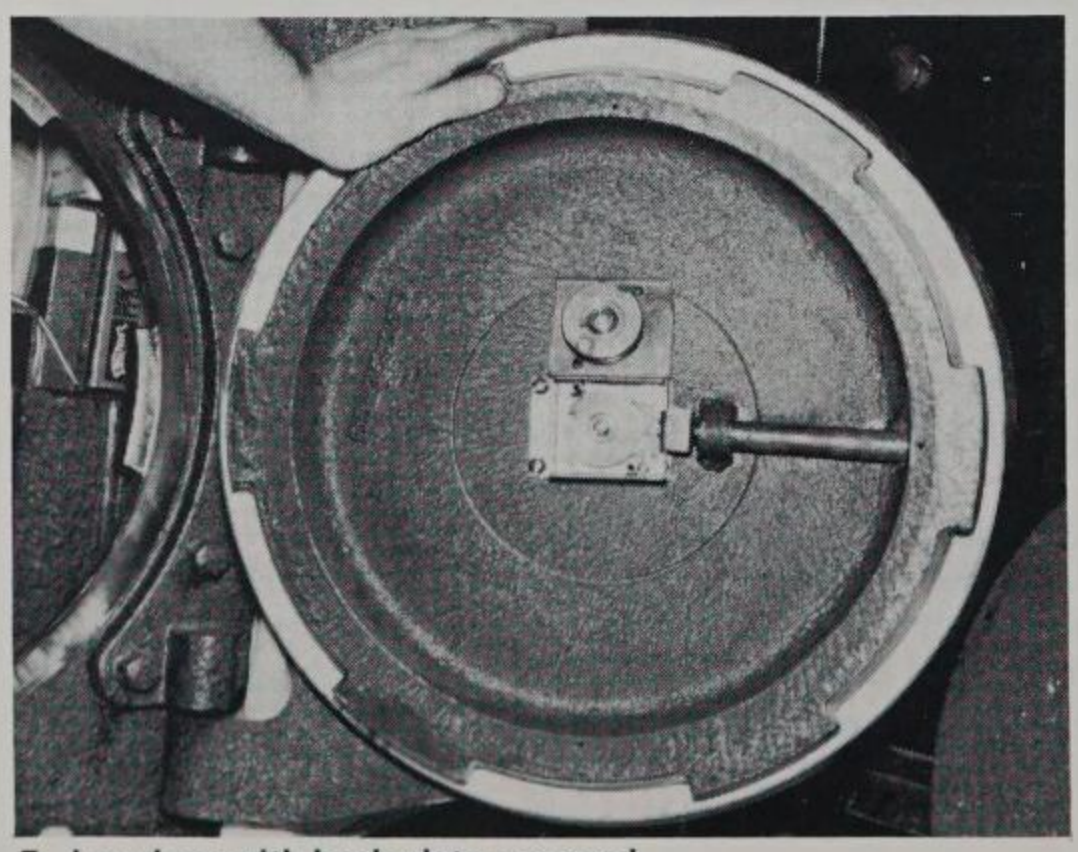
Door thickness to lock: 1¾"
Door thickness to bolt center: 2"
Type of lock: Mosler B-101
Drop-in point: 70
Distance from dial center to the hook: 2"

In photograph four we see a larger lug door. The same criteria used to identify the previous door will again persuade us that a B-101 or KCB-107 is on the inside.

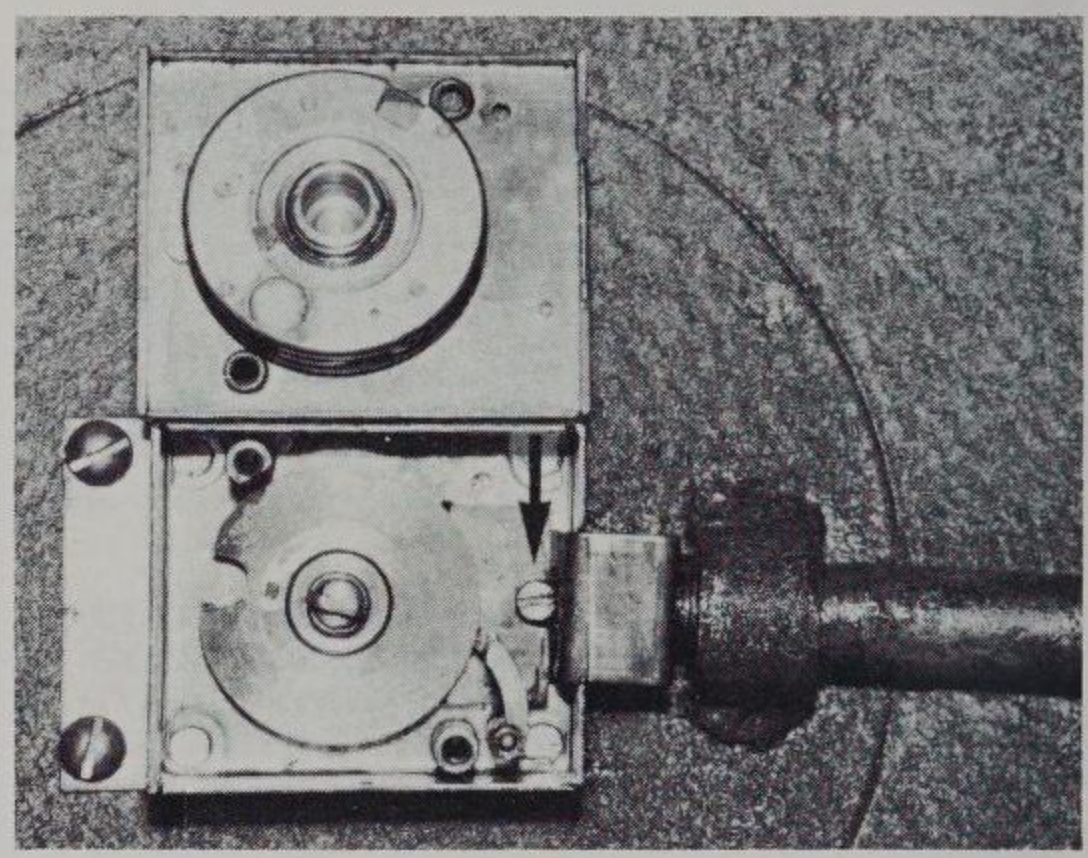
In photograph five the back plate has been removed. The back cover with the wheels attached to it is resting atop the lockcase. The long locking bolt with its built-in relocker completes the system, and as you can see, these are relatively uncomplicated mechanisms.



4. A large lug door.



5. Lug door with back plate removed.



6. Close-up of the KCB-107 lock. Arrow shows relocker stop pin.

Photograph six is a close-up of the lock. This is a KCB-107, which looks very much like a B-101. The only important difference is that this one is a key change lock; the other is hand change. Both locks turn left to open, with the stop position at approximately 8 or 10 on the dial.

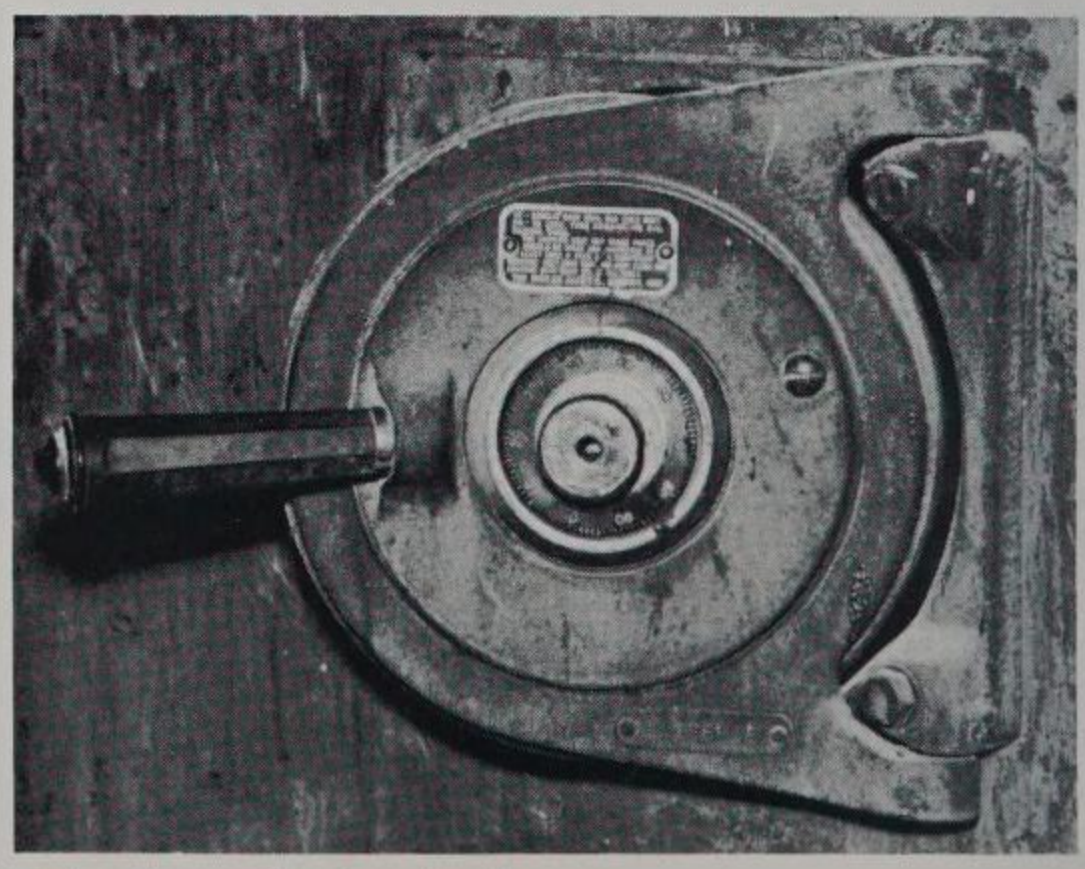
Once again, only two screws are used to mount the lock.

The arrow in photograph six is pointing to the relocker stop pin. This pin is not attached to the lock, but is threaded into the door itself; and for good reason. If the entire lock is punched off the door, it is this pin that holds the relocker in place and keeps the locking bolt extended. Without the stop pin, the relocker would fall out and be absolutely ineffective.

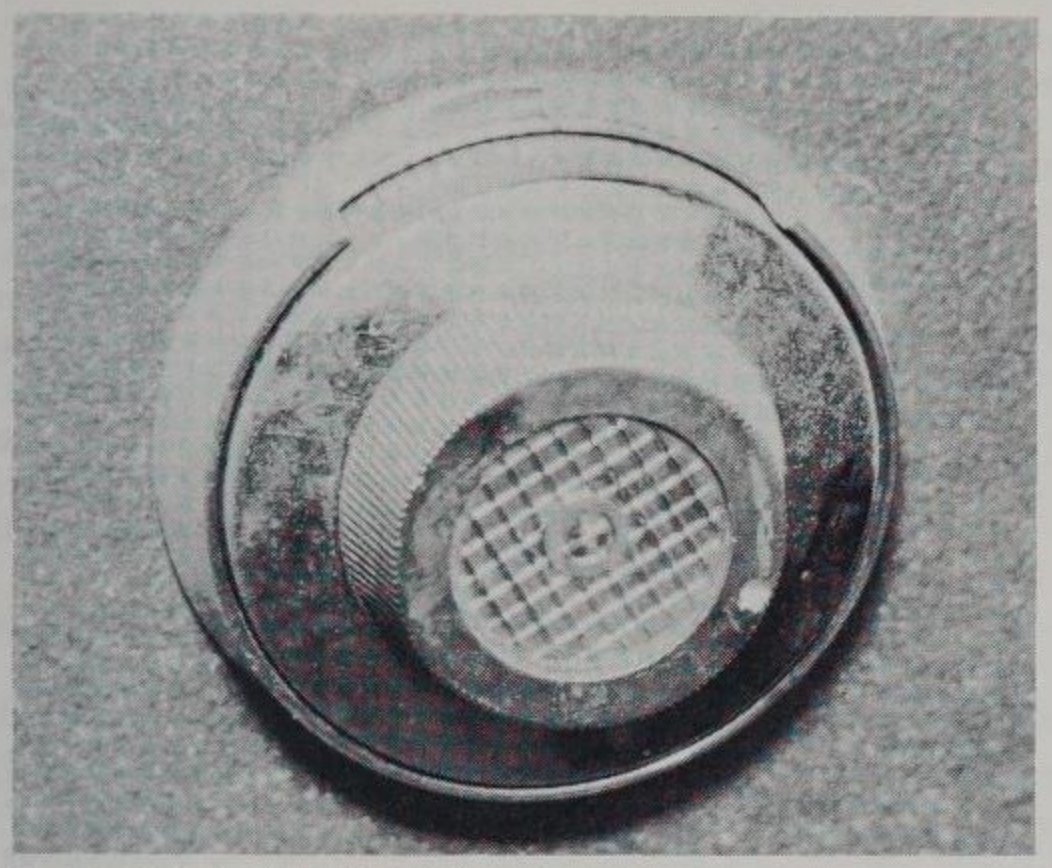
Here are the specifications for this door:

Door thickness to lock: 1¾"
Door thickness to bolt center: 2"
Type of lock: Mosler KCB-107
Drop-in point: 70
Distance from dial center to the hook: 2"

The safe in photograph seven looks pretty much like the previous two doors, but with one small exception—the dial. It has a much larger knob.



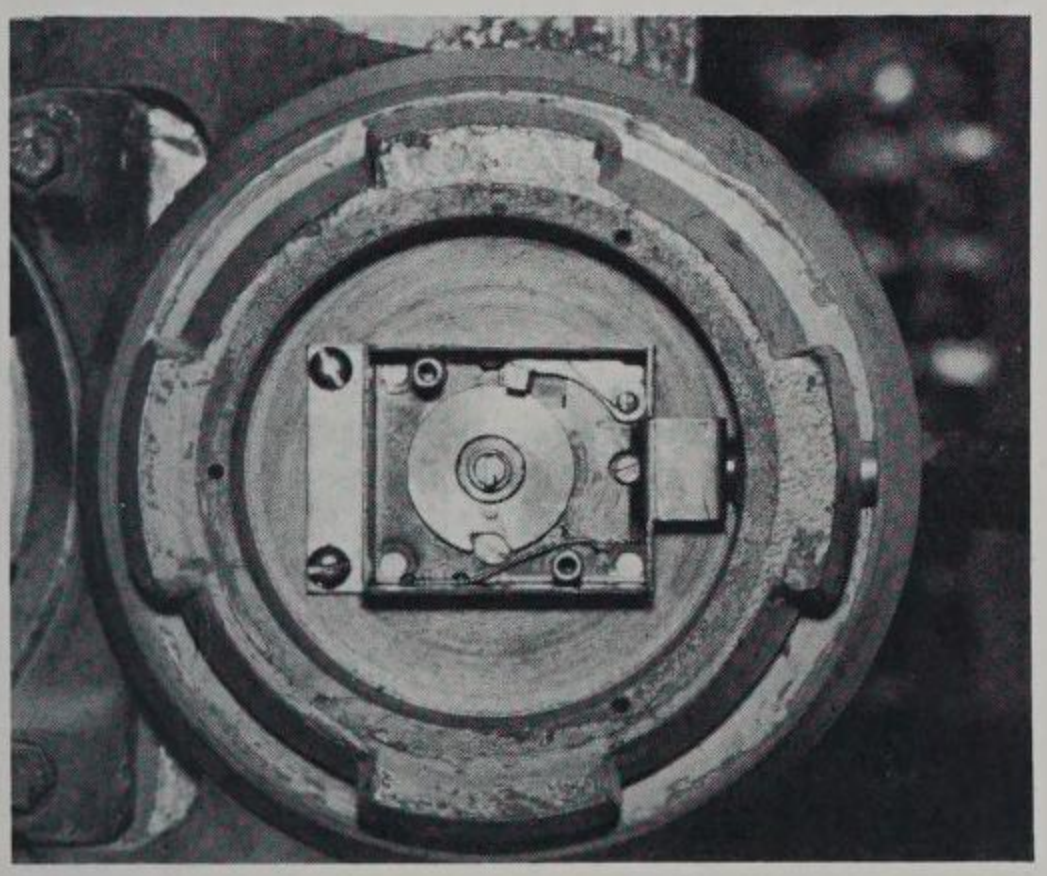
7. Lug door with a large knob.



8. Spy proof dial with checkered center.

On old style Mosler lug doors, the presence of a "large-knob" dial as in photograph seven, or a spyproof dial with the checkered gold center (*see photograph 8*) makes me instantly suspicious. After charting nearly a hundred lug doors, I have found that more often than not, the presence of one of these dials indicates an "uncommon" lock is on the inside.

This is, of course, assuming original equipment. The problem with this is the fact that all of Mosler's old style locks and dials have a spindle threading of 5/16 × 40; and there has been much interchange and replacement in the years since these doors were discontinued. This means that in the real world, you can and will find just about any lock behind any given dial. But percentage-wise, this little tidbit is worth remembering; its potential relevance will be made clear later in the article. (For those of you who, like me, are safe identification fanatics, I might add that the two above mentioned dials, when found on fire safes or fire resistive vault doors, usually indicate the presence of a model B-6 lock.)

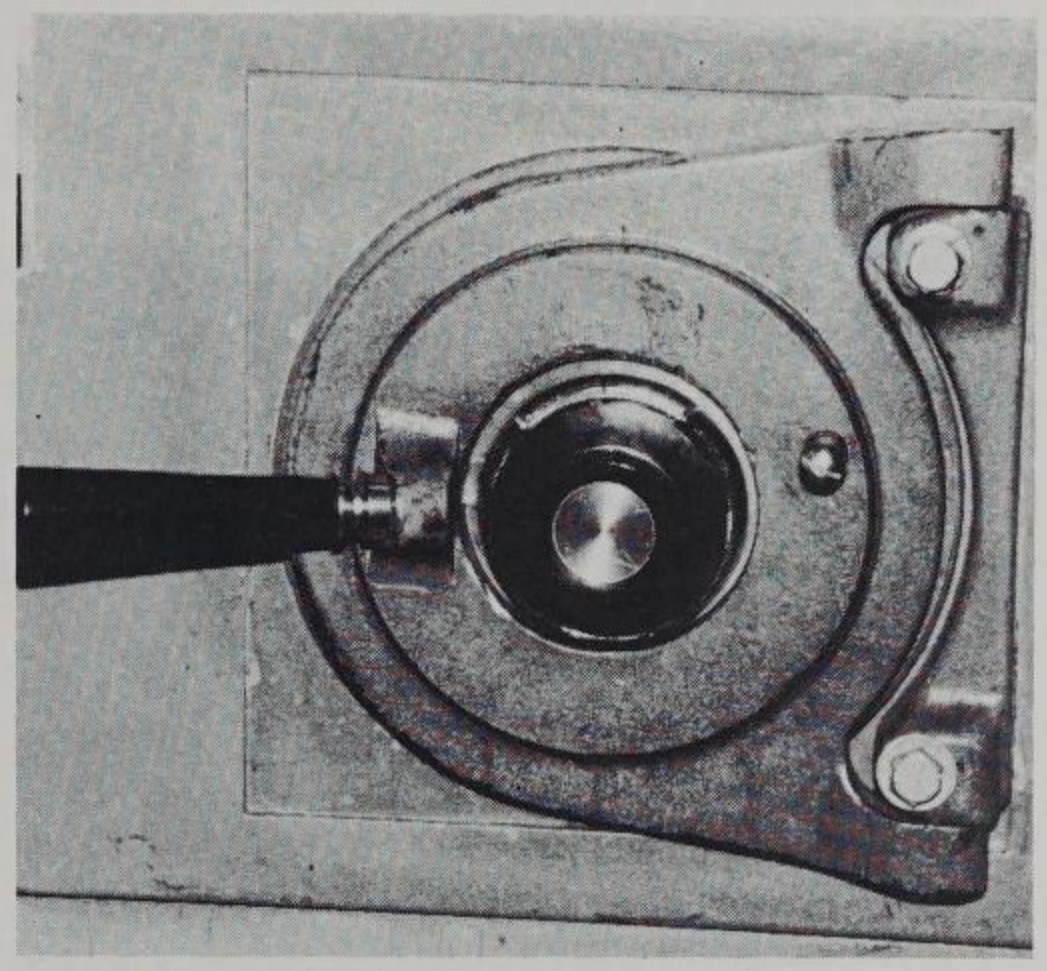


9. Inside the "large-knob" door.

Photograph nine shows the inside of our "large-knob" door. Here we see the most popular of the "uncommon" locks; the RB-104. This is a 4 wheel, hand change lock. Like the others, the lock is attached to the door via two screws through the mounting plate. Unlike the others, the last turn of the dial is to the right.

Here are the specifications for this door:
Door thickness to lock: 1¾"
Door thickness to bolt center: 1⅞"
Type of lock: Mosler RB-104
Drop-in point: approx. 97
Distance from dial center to the hook: 2¼"

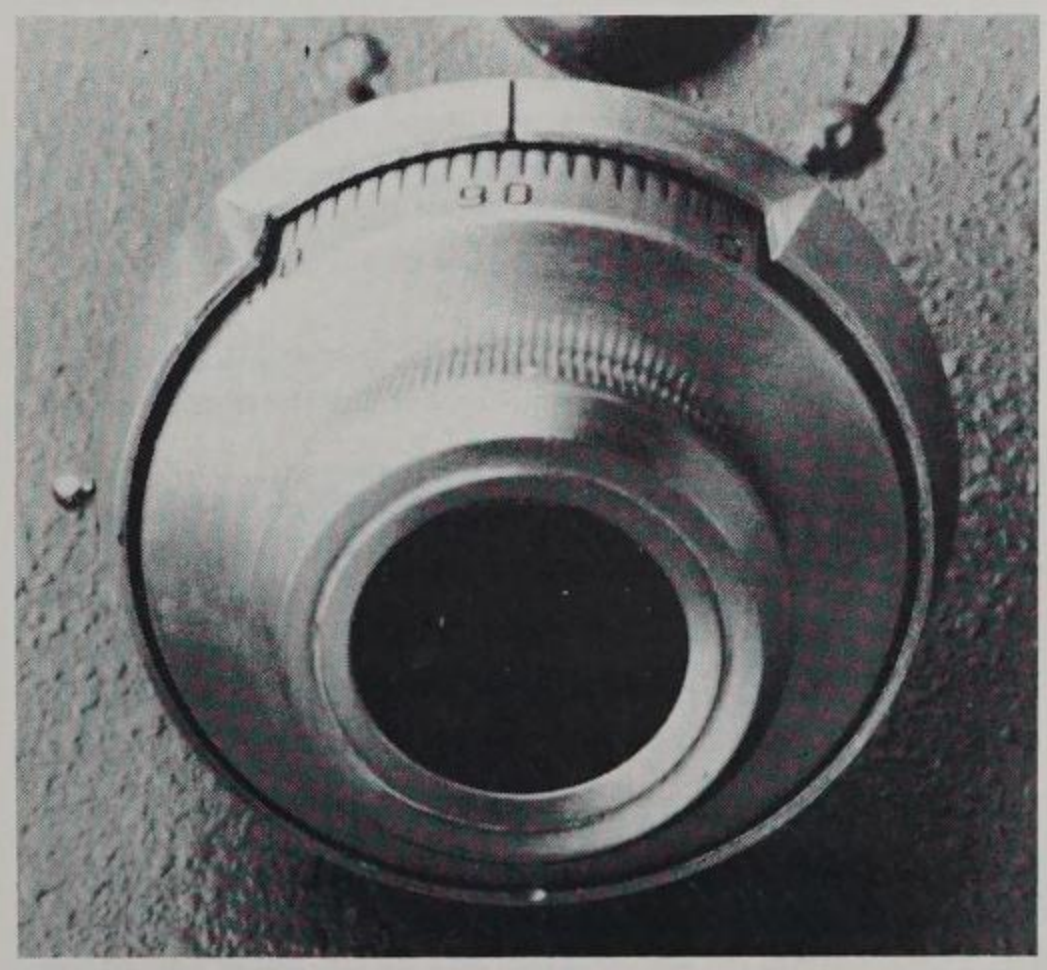
In photograph 10, we see our fourth and last lug door for the day. Right off the bat, the new style black plastic dial with silver center reaches out and grabs our attention. We know from our



10. Old style lug door with a dial replacement.

identification techniques that this is an old style door; so we can conclude the dial is a replacement. (These doors had been discontinued for over a year before the plastic dials went into production).

So how do we identify the lock? Well, once again we do as Jimmy the Greek would, and play the odds. The presence of this black plastic dial or of the chrome spyproof dial with the black plastic center (*see photograph 11*) is a strong indication that a 120 series lock lies behind the door.



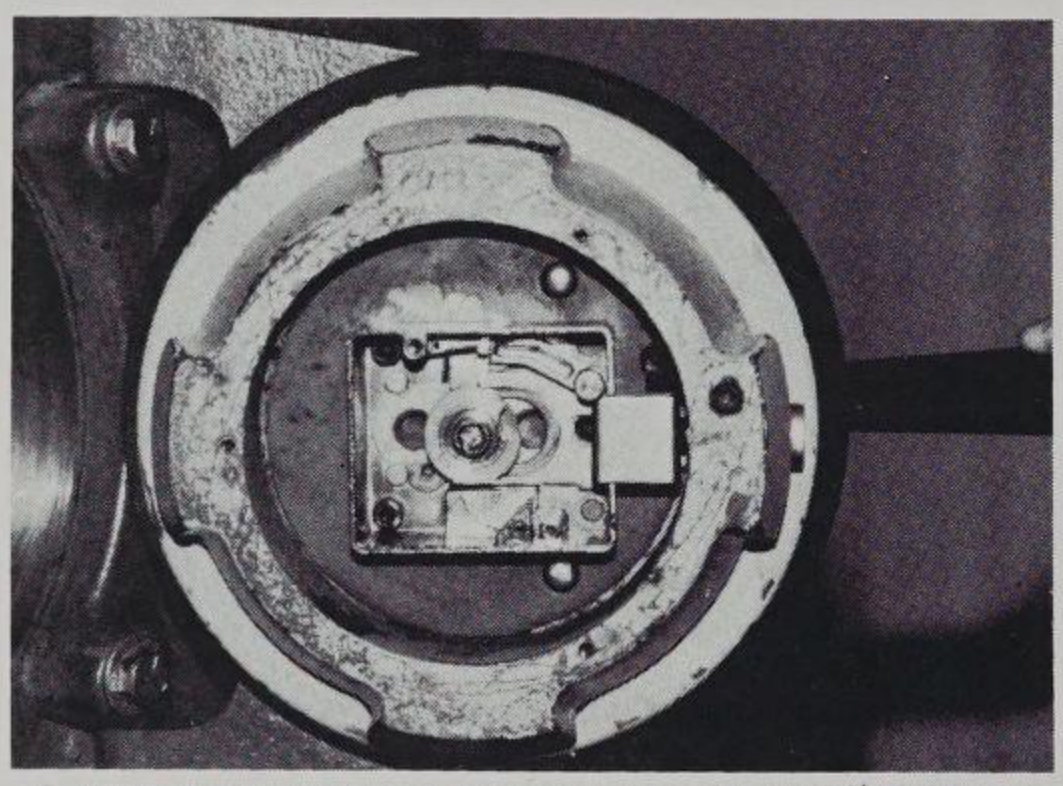
11. The spyproof dial and black plastic center suggest a 120 series lock is present here.

In photograph 12, the back plate and back cover have been removed, exposing the CD 120 lock. This is a three wheel lock; the driver is in front, and there is supposed to be an internal relocker, but it has been removed (the reason why absolutely escapes me).

The 120, also available manipulation resistant (MR), was stock equipment in these safes from 1958 until the doors were discontinued sometime in late 1960 or early 1961.

Specifications:

Door thickness to lock: 1½"
Door thickness to bolt center: 1¾"
Type of lock: Mosler CD 120
Drop-in point: 98
Distance from dial center to the hook: 2⅜"



12. With the back plate and cover removed, the CP120 lock is exposed.

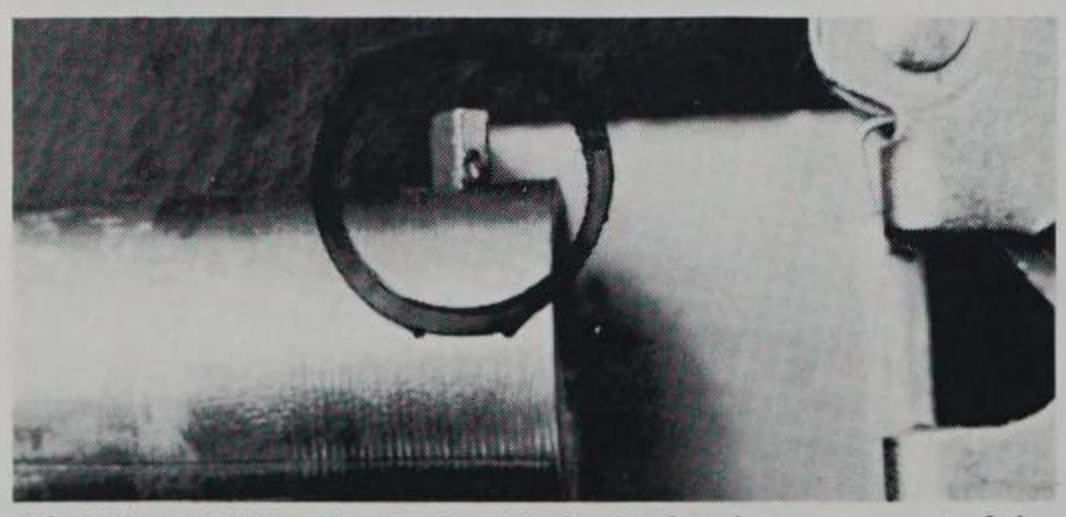
Now that we have covered the basics, let's get down to some specific opening techniques. Most safemen, I would guess, use one of four techniques:

Manipulation. Very effective on the old style Mosler locks, and also on the CD 120 with brass wheels. (The plastic wheels are considerably more difficult.) Indications of half a number or better are not uncommon!

Side drilling to punch back the locking bolt. A quick and effective means of entry, especially on non-clad units. Setting the dial in the contact area is a good idea, as it will help minimize damage to the lock.

Looking the specs over, it becomes apparent that the locking bolt on most of these doors is at a depth somewhere between 1¾" and 2". Split the difference and the chances are you won't miss. I want to let you know, however, that the locking bolt is not always at 9 o'clock. I have seen it at 3 o'clock, and also at 10:30.

Drilling for the hookbolt. With this technique you are aiming for the upper part of the lockbolt, right where the hook engages it—see encircled portion of photograph 13.



13. When drilling for the hookbolt aim for the upper part of the lockbolt (circled).

You can either drill and pin the relocker, or drill and peen the end of the locking bolt over. The object is to keep the relocker from going off. After this is accomplished, push or punch the hook out of the locking bolt and slide it back. The safe is open.

The important measurement is the distance from dial center to hook. Examining the specs; we see that it varies, depending on the lock. This is where identifying the lock becomes critical.

Before deciding on this technique, measure it out and see where you will be drilling. Depending on the size of the door, this method may be out of the question. You do not want to drill through the threaded hole in the bearing plate.

There are other problems with this method. I will confess to trying it three times now, and being unsuccessful all three times. The first time I hit air, the locking bolt was at 3 o'clock instead of 9 o'clock. The second time I ran into a conversion. Someone had replaced the hookbolt configuration with a homemade setup, and made extensive modifications inside the door. It was ugly. The third time (this was the charm!) I misidentified the safe—it was an X series door. (See last month's article.)

Drilling for the wheels. In my opinion this is the cleanest, most dependable approach. A good safeman, even when surprised by the handing or type of lock, can usually get the safe open with one hole in the lockcase.

There are two decisions to make when using this method. The first is whether to drill through the dial ring at an angle into the case, or to drill straight in under the dial.

Make it easy on yourself. If the dial is removable, then by all means remove it. This will allow you to detach the crane hinge from the door and work directly on the surface. You will, however, need to use a little ingenuity in order to turn the spindle. When the screw is backed out and the dial removed, the entire punchproof portion of the spindle comes with it. If the dial is not removable, I usually drill through the dial ring.

Decision number two is the all important "where to drill." Although I am a real stickler for safe identification, I must say that positive I.D. is not nearly as critical on old style doors as it is on new style doors. Nonetheless, we will briefly run over the "sweet spots" to shoot for, and the sour spots to avoid.

On the B-101, KCB-107, and RB-104, the area around 94-95 is good, as is the area around 15-16. Avoid 0 because you may hit the lockbolt guide screw. Do not drill at drop-in; the driver is in front, and the fence will obstruct your view of the wheels. Tuck away in the back of your mind somewhere, the fact that RB-104 wheels are smaller (1⅝") than the other two (1-13/16 and 1-15/16 respectively).

Also be careful if you are ever drilling through the left side of the dial into the lockcase. Remember, it is mounted with only two screws way over yonder. If you put a lot of pressure on the lockcase, it will bow out, severely binding the driver; or worse yet, you may set off the relocker.

The 120 series locks are considerably different. I have two pet spots; 3 is to scope, 67 is to sight by eye. Avoid drop-in, there is too much garbage in the way. Also, avoid the area on the right side of the dial; the large spacing washers will obstruct your view of wheels #1 or #2.

I mentioined this last month, and it bears repeating. Do not let the presence of an S&G dial fool you. The odds greatly favor a Mosler lock being on the inside. Take advantage of the easily pullable S&G dial and enjoy the luxury of drilling straight in. If you don't have any other clues to go on, such as certain labels on the door, color or a logo on the body (Mosler has changed theirs a number of times over the years), assume the presence of a B-101.

As for the hardplate, let me say that the only tough stuff I have ever encountered in these doors was in the later models (1958-1961) that were equipped with 120 series locks. A few of these rascals came with a lumpy hardplate (Relsom or a predecessor) that will make you wish you had become an accountant!

As you run into these doors in the field, remember that they were available in a half dozen sizes, ranging from the peewee 00 door (7″ clear opening) on up to the behemoth size 8 door (30″ clear opening). As far as I know, the information presented here applies to old style hookbolt lug doors regardless of size; which brings me to one last point.

I should make it perfectly clear that these articles were written without the consent of or verification of accuracy by the Mosler Safe Co. Most of the information and all of the identification techniques were drawn from my own notes and experience. Any inaccuracies or errors are mine alone, and I accept full responsibility for them. ■

No wonder I didn't like going for the hookbolt — I was doing it wrong! A year or so after writing this article, I was finally successful. The trick is to drill not at the top of the locking bolt, but right in the middle of the darned thing. From here you can penetrate the side of the locking bolt facing you. Pin the relocker in place, push the hook out of the locking bolt and pry it back. Once you do it properly, you will agree that this technique is a winner.

Servicing In-A-Floor Safes

"This month we will explore the workings of a particular model that was discontinued in 1985. We will examine the lock and go over some opening techniques you can use."

by Dave McOmie

A recent telephone conversation I had with a fellow locksmith went something like this:

Caller: Hello Dave, I have a safe that needs to be opened ASAP, can you get to it?

DM: No problem, it's been a slow day. Give me the name, address, phone number and person to see. I'll take care of it right away. Uh, do you know what kind of safe it is?

Caller: It's a floor safe.

At this point I decided to start over, because the term "floor safe" is used by different people to mean different things. So we continued.

DM: Does the door sit flush with the floor, or is it in a cladding above the floor?

Caller: It's flush with the floor.

DM: Is the door round or square?

Caller: It's round, you know, like a floor safe.

DM (on a hunch): Is this a key operated safe?

Caller: Yes.

DM: Are we dealing with a lost key, a key malfunction, or a burglary?

Caller: A malfunction.

In due course, he gave me the customer's name, which left no doubt in my mind what kind of safe it was. This particular chain (Fortune 500, no less) has almost exclusively used the key operated safes manufactured by the In-A-Floor Safe Co. of Los Angeles, California.

This month we will explore the workings of these safes, which were discontinued in June of 1985. In the process, we will examine the lock that was used in these doors, and go over some opening techniques. Finally, we will take a look at the new style doors that have been in production for the past couple of years.

A key operated In-A-Floor lid, typical of many you will encounter in the field, has doors that are 7⅛" in diameter. (The inner doors are slightly smaller, with an outside diameter of 6¼", but the lock and relocker configuration is identical.)

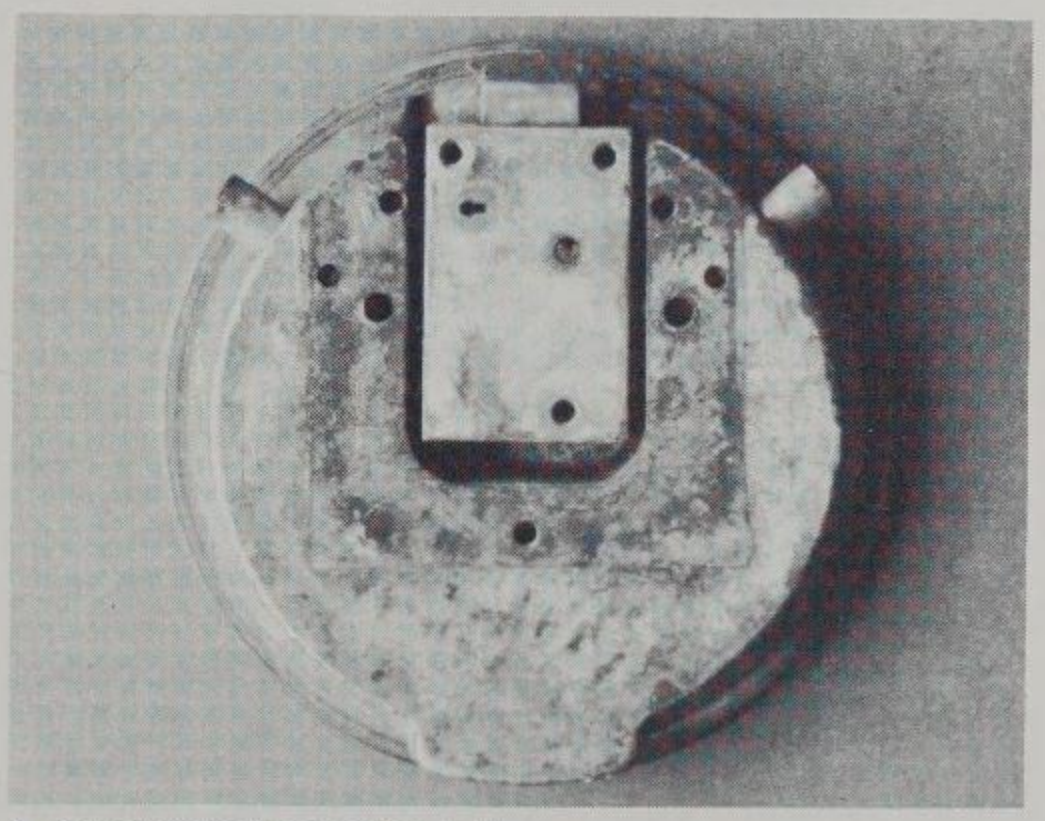
A small wire-type handle with built-in dust cover slides over the nose. These features are unique to In-A-Floor, and can help distinguish these from similar doors produced by other manufacturers.

The back of the door has a backplate and six screws; three of them hold the lock onto the backplate, and the other three secure the plate to the door. Also on the back is the change key hole.

In photograph one all six screws have been removed, along with the backplate, giving us a clear view of the lock and relocking bolts. Under normal operating conditions, two little hubs on the backplate hold the relocking bolts in check; the lockbolt is what actually holds the door in the locked position. But if the lock is punched, the back cover falls away, setting off the two ½" relocking bolts. More about this later.

The locks used in these doors were single-nose key changeable locks manufactured by Sargent & Greenleaf from 1929 through 1985 when they were discontinued.

The original locks, a modified version of the 4140 eventually came to be known as the 4160. The S&G #4160 gave way to the #4161 which came with a stainless steel post. This was improved by the #4162 and its redesigned trap lever to resist accidental unlocking of the levers. Last in the evolutionary chain came the #4163, which used a rotating post with flats on it; once again to



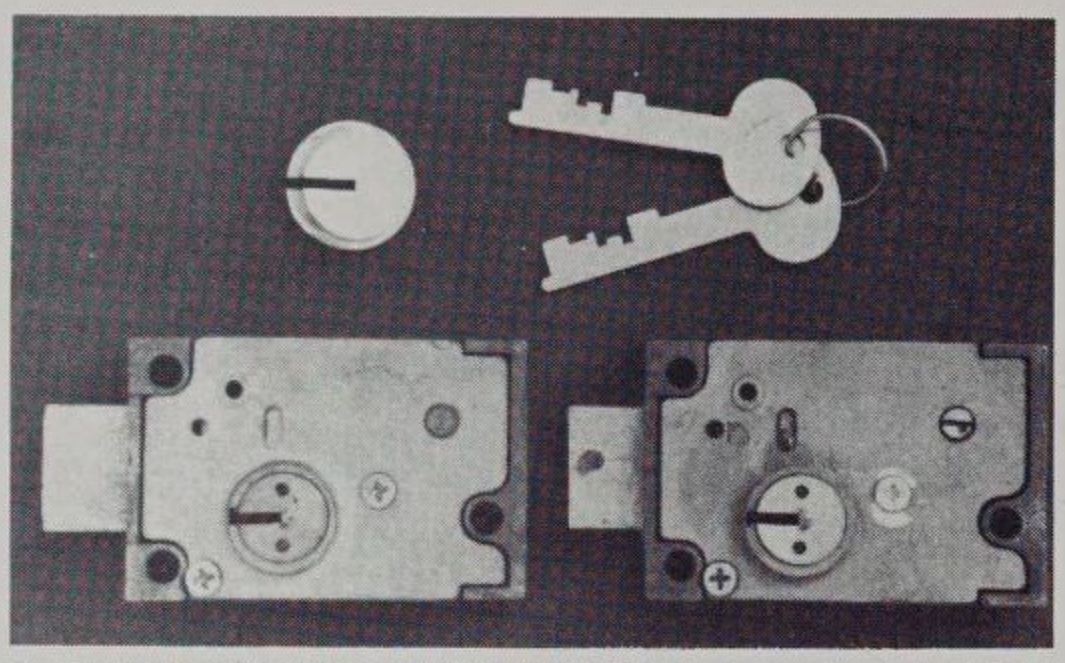
1. Clear view of relocking bolts.

combat the problem of unlocking levers.

Before we get into specific opening techniques for these locks, I would like to bring something to your attention that you may or may not be aware of.

Lockmasters has recently marketed a fixed lever version of the #4163, which is manufactured by Precision Products. With the available supply of the Sargent & Greenleaf locks dwindling, these new locks are a godsend.

In photograph two we have a Precision Products #LKM-4163RL on the left, and an (obsolete) S&G #4163 on the right. Also in the picture is the hardened nose and a pair of keys cut on S&G #89 blanks. Though these locks look nearly identical from the outside, the differences between them become evident upon disassembly.



2. Precision Products #LKM-4163RL and an obsolete S&G #4163.

When the S&G #4163 is completely disassembled (except for the lockbolt), we have 32 separate pieces; that is a lot of parts for one lock!

The new Precision Products lock torn down, is much simpler. Having done away, among other things, with the sweep levers and the spacer washers, the grand total of parts is reduced to sixteen. The levers themselves are stamped with a number corresponding to the depth of the cut, which should make changing them a snap. Switch the levers around, cut a new set of keys by code (or by depth keys), and away you go.

It got to the point on the old locks where most of us would not perform a combination (key) change without servicing the lock; which means completely disassembling, cleaning and reassembling the lock before changing it. This is a time consuming job that many of us dislike, which brings me to say that the new, fixed levers do not bother me at all. They are easier to tear down, there are fewer parts to contend with, and most importantly, there are no more worries about a lever unlocking itself two days after a combination change.

Even the most conscientious of us, who clean and service every lock before changing it, and follow up by banging the lid down several times to check for a problem lever, have a skeleton or two in our closet.

The only real drawback that I can see with the new locks is the price. By the time you mark it up and figure in your labor, you may not be too far from the price of a new style retrofit door. The only fair thing to do is lay out the options and let your customer decide.

Okay, let's get down to the good stuff and discuss some opening techniques. The most common situation you will be faced with is where the customer has the key, but it won't work. This is usually due to a lever momentarily unlocking, slipping to a deeper cut, and then re-engaging.

Here is a trick that locksmiths who carry flat steel machines in their trucks can try:

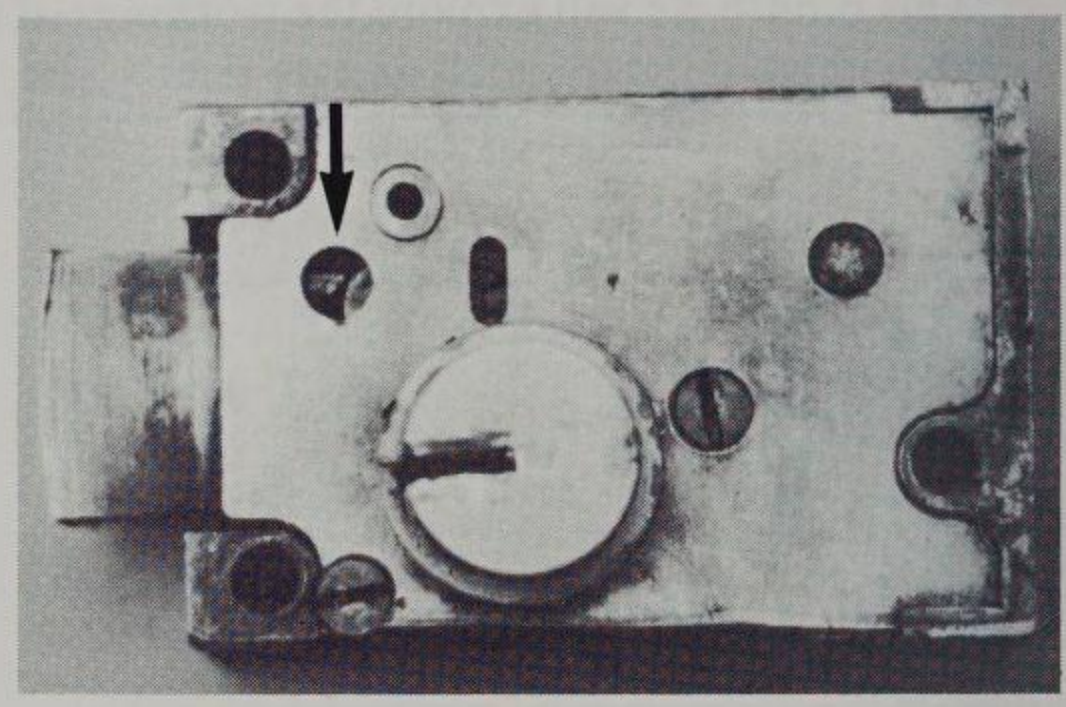
Duplicate the customer's key onto a much thinner blank. Insert the thin key into the keyway. Now there should be enough room to insert a long hook pick in alongside the key. The idea is to raise each lever one at a time; when the slipped lever is raised to the proper height and the key turned, the safe is open.

Another method, which is applicable to a lost key as well as to a slipped lever, is to use the decoding tool manufactured by Lee Industries. Some people claim great success decoding the 4160's and 4161's.

However, since I do not carry a key machine, it is rare that the opportunity arises for me to use these methods. Most of the time I treat lockouts due to a lost or malfunctioning key as if I were dealing with a safe deposit lock with an unpullable nose.

Since these noses are very thick and are hardened, pulling them is not feasible. I prefer the drill and pick method.

Photograph three is an old 4160 that was in a "floor safe" that I opened. The arrow is pointing to the hole that was drilled through the cover to get a good look at the fence and lever gates.



3. Clear view of relocking bolts.

Using a wire (or small piece of spring steel) and a pick key, you raise each lever one at a time. While the levers are being lifted, you hold slight pressure in on the wire. When a gate is lined up, the wire will pop in, and hold each successive lever in place. After all eight levers are lined up, the pick key is used to turn the foot. This forces the fence into the levers. If the gates are lined up perfectly, you will feel the fence binding against the wire. Remove the wire, continue turning the foot and the safe is open. Most of the time, however, it takes a little jiggling of the wire to get the gates lined up just right.

I should warn you that these doors are hard. They are case-hardened, and there is also a piece of hardplate between the door and the lock. Up until the early 1970's, even the bodies were hardened!

When drilling, I strongly suggest you use Strongarm drill bits, for their superior ability to bite into hardened surfaces. No grinding is neccessary; just put the bit against the door, lean on your motor a little, and bump the trigger. Three quarters of an inch later you will be into the cover of the lock.

If the lock has been punched, then it is a whole new ballgame. You have three choices: 1) Drill through the concrete and through the safe body to push the relockers in. 2) Drill through the door to probe the relockers back. 3) Use a door puller (not a dent puller) to sheer the two ½" relocking bolts.

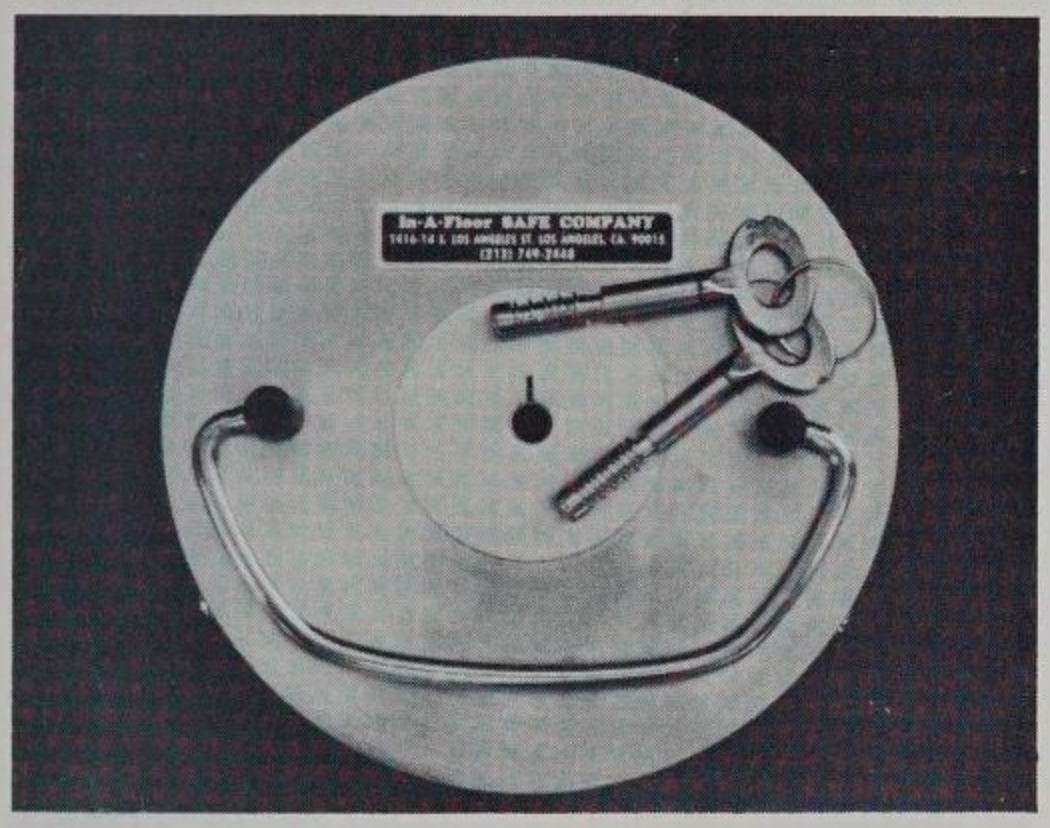
Choices 1 and 2 constitute a ridiculous amount of work and may or may not be effective. These doors came with deadlocking pins that drop down behind the relockers when they are set off. Although most of these have been removed, it is a chance that I don't even take. In my humble opinion, method 3 is the only way to go. Lee Industries manufactures a very excellent puller, and having once spent the time and money to make a puller of my own, I feel qualified to say that Lee's is well worth the investment.

Before we move on, I would like to make one final observation about opening techniques; that is the art of picking and impressioning. Most of us gave up long ago trying to pick or impression the S&G locks, due to the serrated edges on the levers. However, the new locks do not have these serrated edges, and my initial efforts lead me to believe that they are pickable. As more and more of these locks appear in the field, this may indeed become a viable alternative.

All right, out with the old, in with the new! In-A-Floor's new

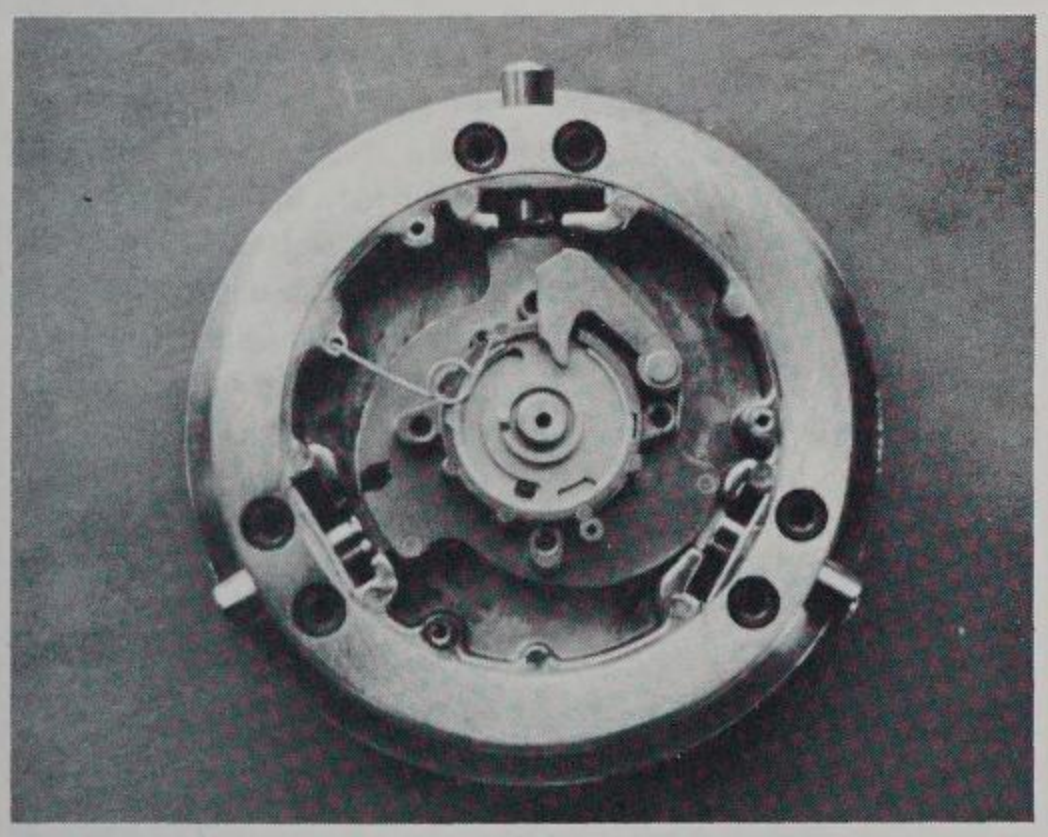
style outer doors are very interesting. These are available keylocking or with combination locks. The combo lock version is also available with keylocking or removable dials. (How about a keylocking, removable dial?)

Photograph four is of a new style keylocking door. Notice the length of the keys—they are an inch shorter than normal; perhaps to overcome customer resistance to the longer, bulkier keys. These are clean looking aesthetically pleasing doors.



4. New style keylocking door.

Photograph five shows us the guts with the back cover removed. The ever popular LaGard lock looks quite at home, which is only natural since LaGard made half the door. Half the door? That's right. LaGard makes the bottom assembly and ships it to In-A-Floor where they bolt it onto their own top plate.

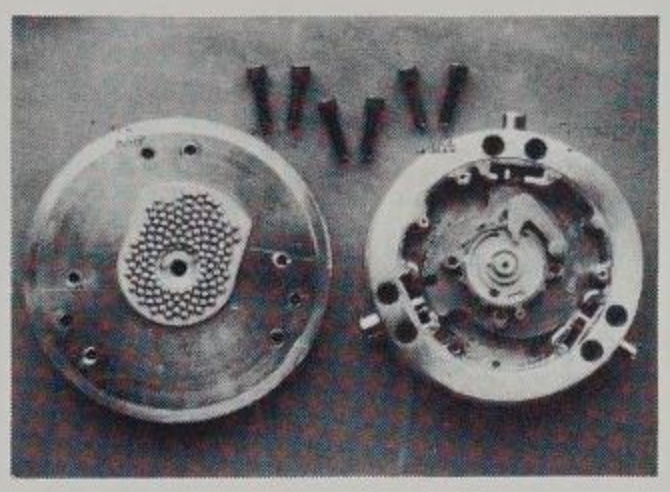


5. Back cover removed from keylocking door.

In photograph six, I have removed the six 5/16″ × 18 bolts and separated the two halves for your inspection. The "egg crate," ball bearing type hardplate also comes from LaGard. I layed it on the top plate to show the approximate position it is in when the two halves are bolted together.

The assembled door is a tri-bolt affair, with locking bolts at the 12, 4 and 8 o'clock positions. Each bolt has its own wire-type relocker that is 2¼″ out from the dial center.

As for drilling the hardplate, I have to admit that I have not done one yet, so I am not sure of the best approach. For sure, though, I would go in with a big hole, probably a ⅜″, to have

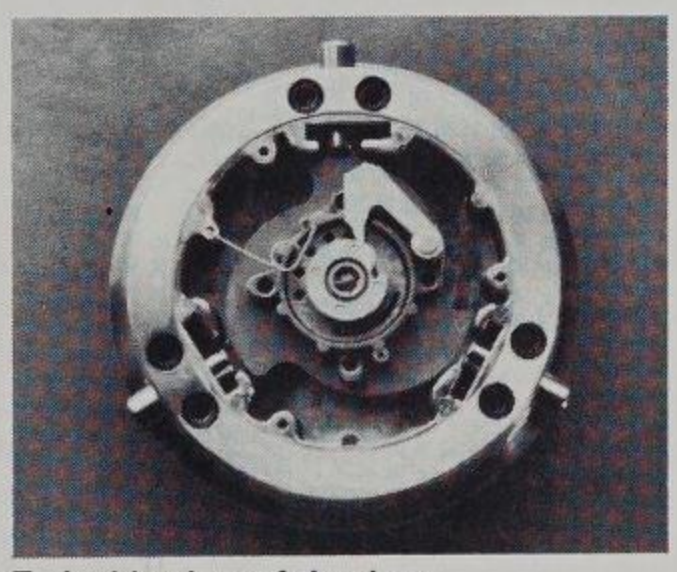


6. The door separated in half.

maximum area to work in. It appears to me that an end mill and a magnet will probably do the trick.

The combination locked outer door is quite similar to photograph four, except there is a combination dial instead of a key-op lock. Utilizing LaGard's little #2107 dial and ring, this door, like the keylocking door, is streamlined and very attractive.

Photograph seven shows us the inside, and with the exception of the driver, this door looks very much like the inside of the keylocking door. All of the critical specs are the same.



7. Inside view of the door.

Also available from In-A-Floor is a replacement inner door. These come equipped with an S&G #4440, a relocker, and will interchange with the old 6¼″ inner doors. You may be interested to know that a complete inner door costs less than the price of a replacement #4163. ■

Most of the old key-operated In-A-Floor doors with 4160 series locks have been replaced with LaGard style doors. I say yay. These days, I don't mess around. Pull the old clunker out of the ground, slip in a new-style head and be on your way.

Cracking Diebold's Tri-Bolt

"Our subject is a Diebold TRTL-30 tri-bolt lug door. Step by step, we will go through the actual opening, examine the lock, and cover service techniques."

by Dave McOmie

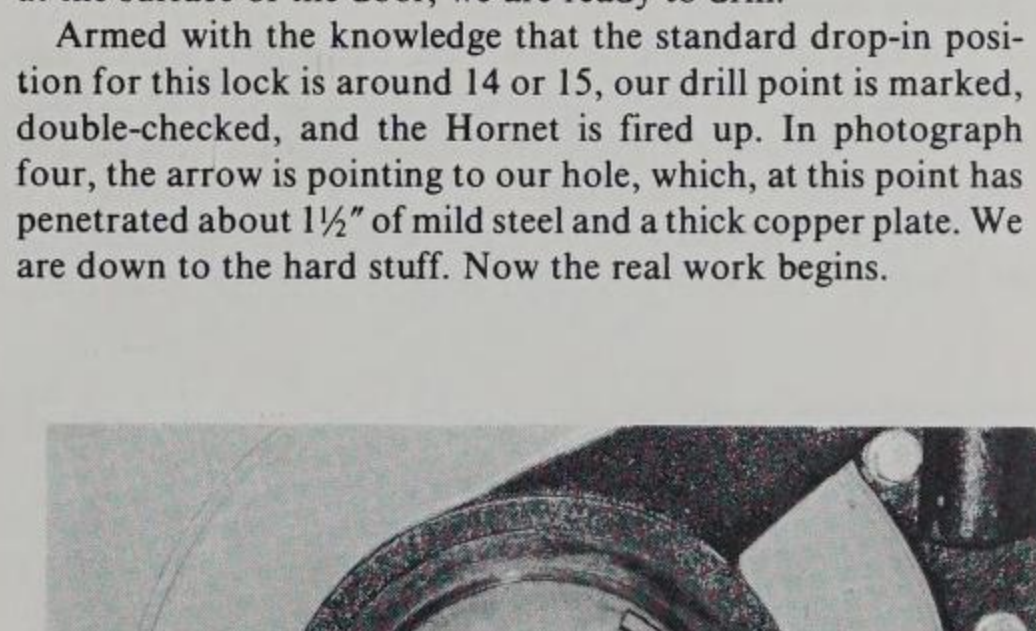
Hardplate. An innocent sounding word. On occasion, I still have to remind my wife that it is not unbreakable dinnerware, though for many years it certainly was undrillable safeware.

Even today, with our carbide bits and high speed motors, names like Relsom and Maxalloy will elicit a groan from the best of us. Others, such as Alchronite, Adamantium, and Qualzite can make a guy wish he had treated himself to that minilance for Christmas, instead of that shiny new riding lawn mower.

There are other hardplates that were never given fancy names, or if they were, the names never became common usage in the trade. The safe we are going to discuss this month uses not one, but two extremely hard hardplates. Their proper names remain unknown to me.

Our subject is a Diebold TRTL-30 tri-bolt lug door, as shown in photograph one. It had been purchased locked, with no combination, and I (of course) got the call to open it. Step-by-step, we will go through the actual opening, examine the intricacies of a much misunderstood lock, and cover some valuable servicing techniques. Let's get to work.

Twirling the dial, we feel resistance, and hear a "click" around 100. This tells us the lock itself is the popular Diebold manipulation resistant model 180-55.

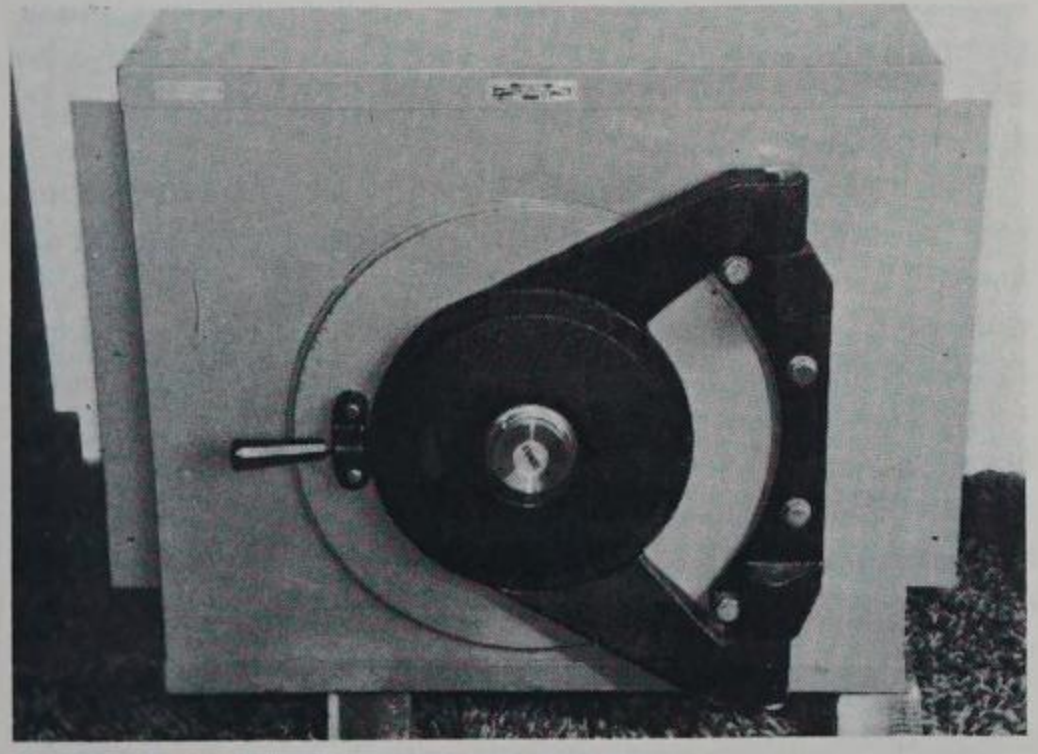


2. Four large Phillips head screws visible after dial ring is pried off.

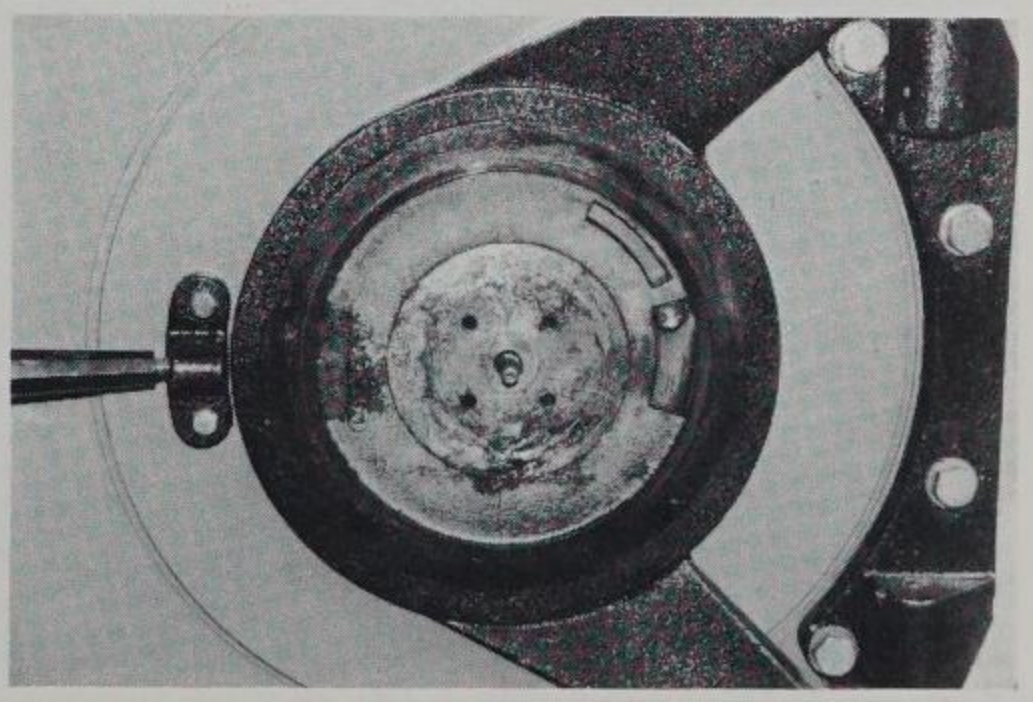
Without hesitation, the dial is pried off, the dial ring is removed, and in photograph two we can see the four large Phillips head bearing plate screws.

In photograph three, the screws have been removed (with the aid of an impact driver), disattaching the bearing plate. Staring at the surface of the door, we are ready to drill.

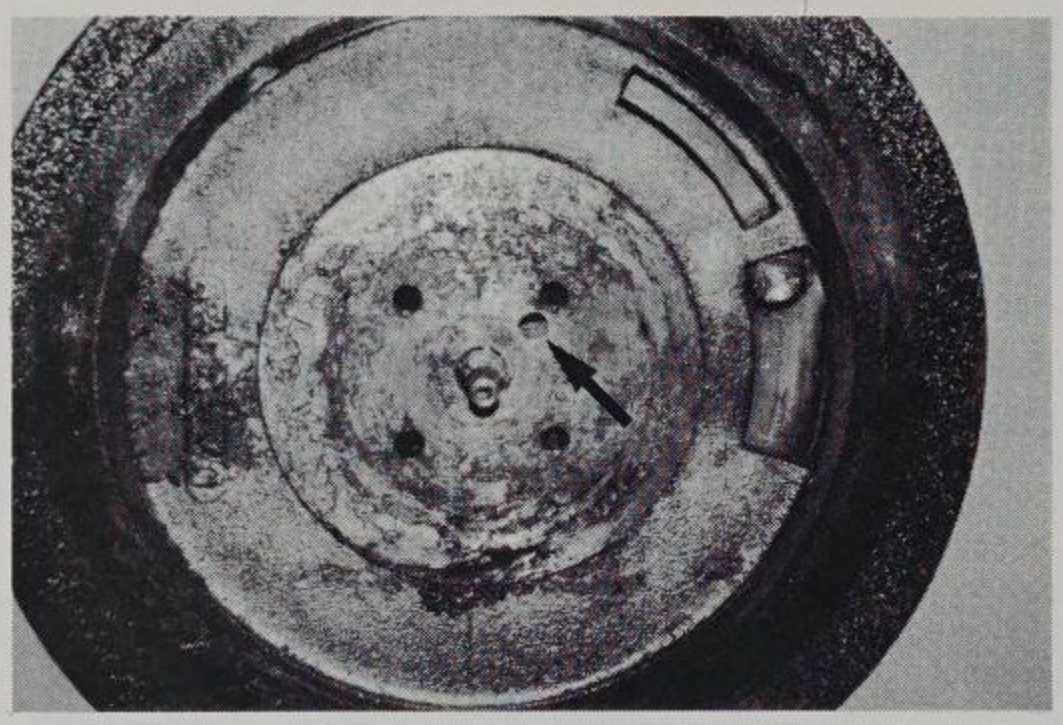
Armed with the knowledge that the standard drop-in position for this lock is around 14 or 15, our drill point is marked, double-checked, and the Hornet is fired up. In photograph four, the arrow is pointing to our hole, which, at this point has penetrated about 1½" of mild steel and a thick copper plate. We are down to the hard stuff. Now the real work begins.



1. The Diebold TRTL-30 tri-bolt lug door.



3. View after screws have been removed.



4. Arrow shows hole penetrated to about 1½".

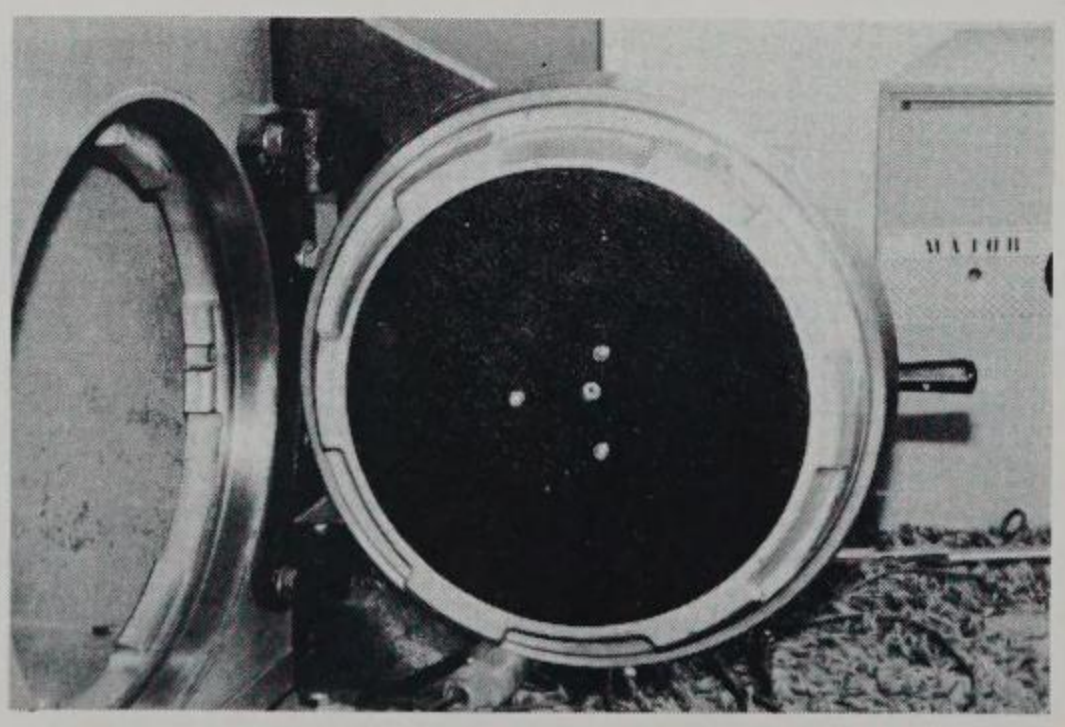
Other than using a lance, there just isn't any quick way that I know of to beat this stuff. For difficulty, I put it in about a six-way tie for second, right behind the Relsom that Mosler used in their dual-bolt lug doors. Fortunately the plates we are dealing with here are not drill bit destroyers. It takes a few carbide bits, a few more ounces of sweat, and a couple of hours. Punching is helpful, as is hammer drilling. I might add that for punching to be truly effective, you must swing the hammer *hard*. (Just don't hit the spindle!)

After the hardplates are penetrated, there is still a layer of mild steel to go through before entering the lockcase. When the dull flakes of pot-metal start coming out the hole, the rush of adrenalin tells us we are almost there. Slowly, and very carefully, with frequent pauses for progress inspection, the hole is completed.

Peering in the hole, which has been illuminated by a flexlight, our hopes are realized—it is right on the money! The reverse procedure is used to line the wheel gates up under the fence (this is a front-drive lock); and on our last turn to the right the fence drops in, the cam plate rotates, and all three locking bolts are retracted.

The next step is an important one. Remember, before you rotate the door to *reattach the bearing plate*. Otherwise, as soon as the lugs clear, the door will come crashing down. And believe me, your Nike's will be ruined.

Okay, after the bearing plate is reattached, the door is rotated and swung open. In photograph five we see the back of the door

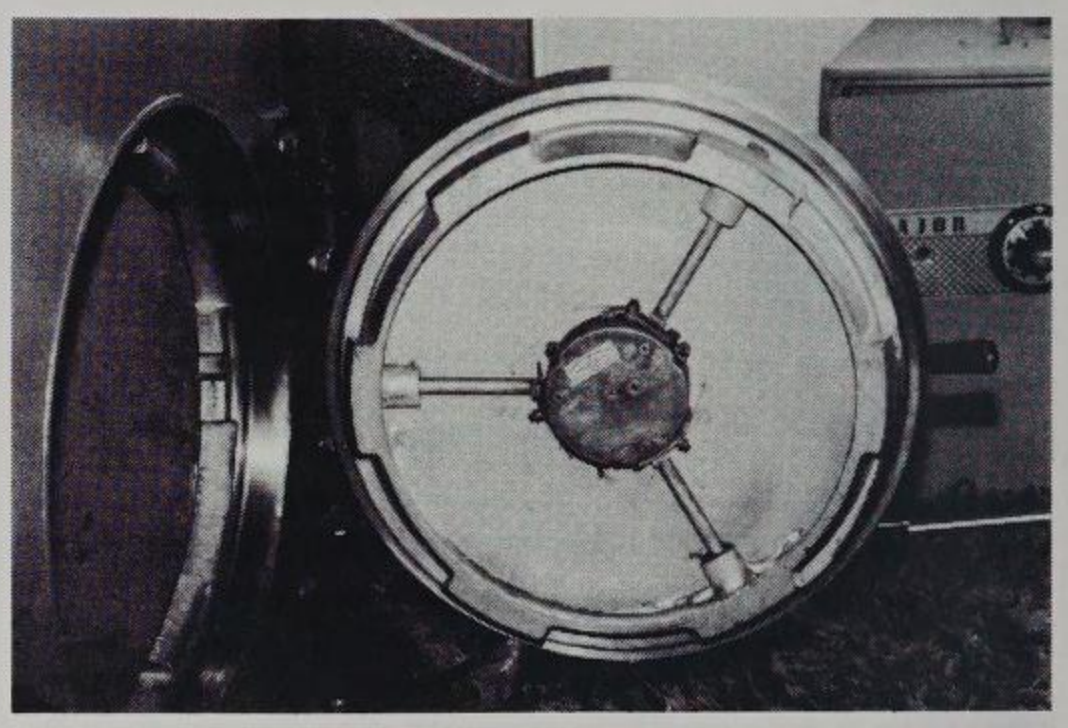


5. Back of the door with back plate attached and view of copper layer.

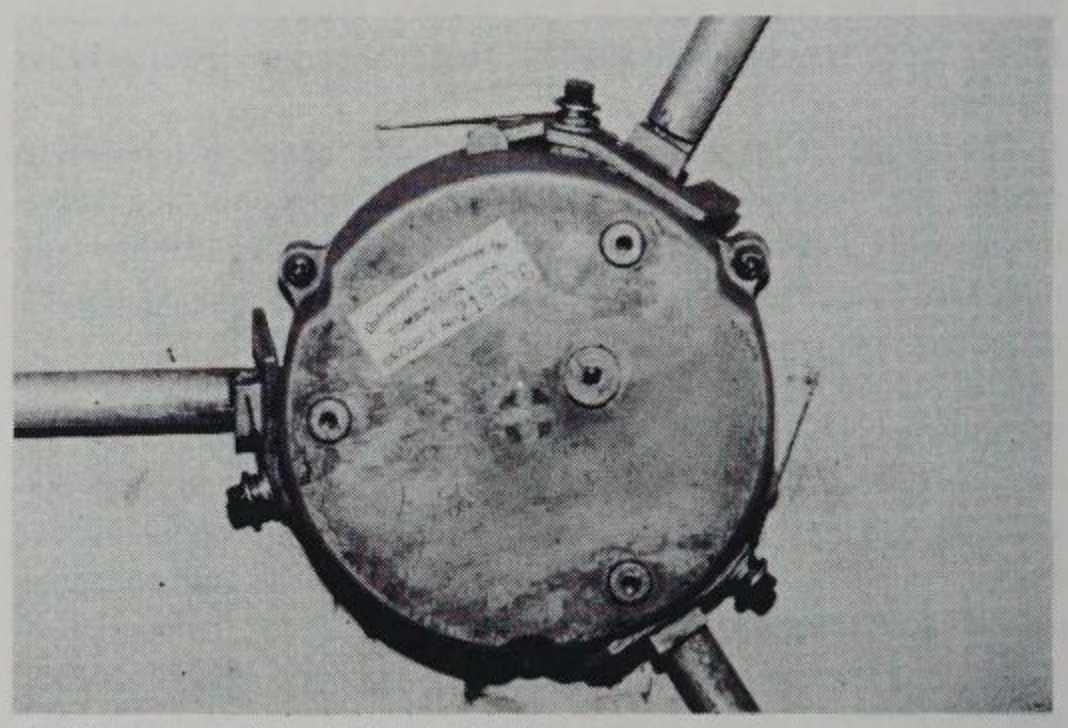
with the back plate still attached. Notice the unusual location of the attaching screws. Instead of being threaded into the perimeter of the door, these screws go directly into the back cover of the lock. This, in my opinion, was a design flaw, the ramifications of which we will discuss shortly. Also visible in this photograph is the copper layer in the body.

In photograph six, the back plate has been removed, giving us a clear view of the bolt pattern. The locking bolts are at 3, 7, and 11 o'clock, and each bolt has its own slotted lug to engage in.

Photograph seven is a close-up of the 180-55 lock with the



6. Back of door with back plate removed and view of bolt pattern.



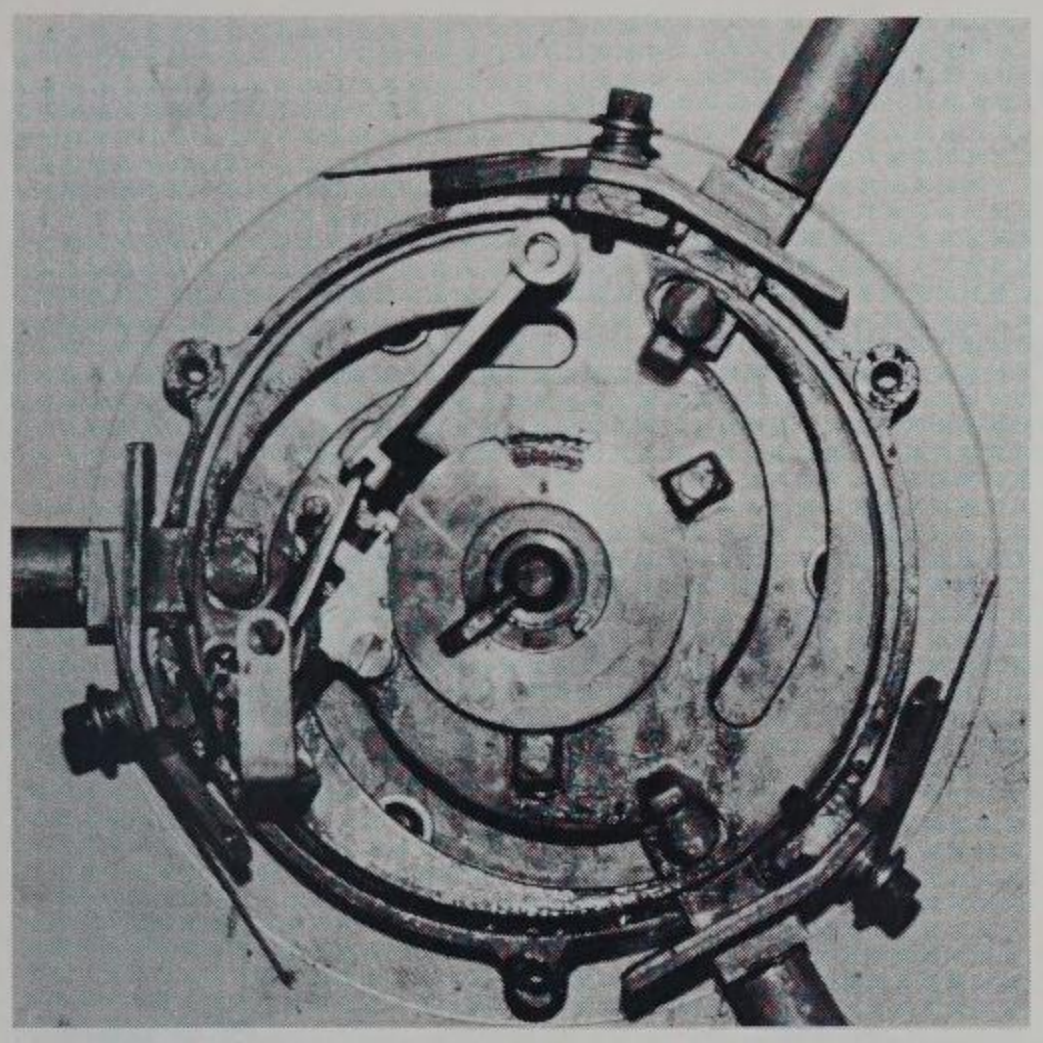
7. Close-up of the 180-55 lock.

back cover still attached. The U.L. label designating this a group 1 lock can be read, and the change key hole can also be seen. The other three holes in the back cover are threaded to accept the back plate screws.

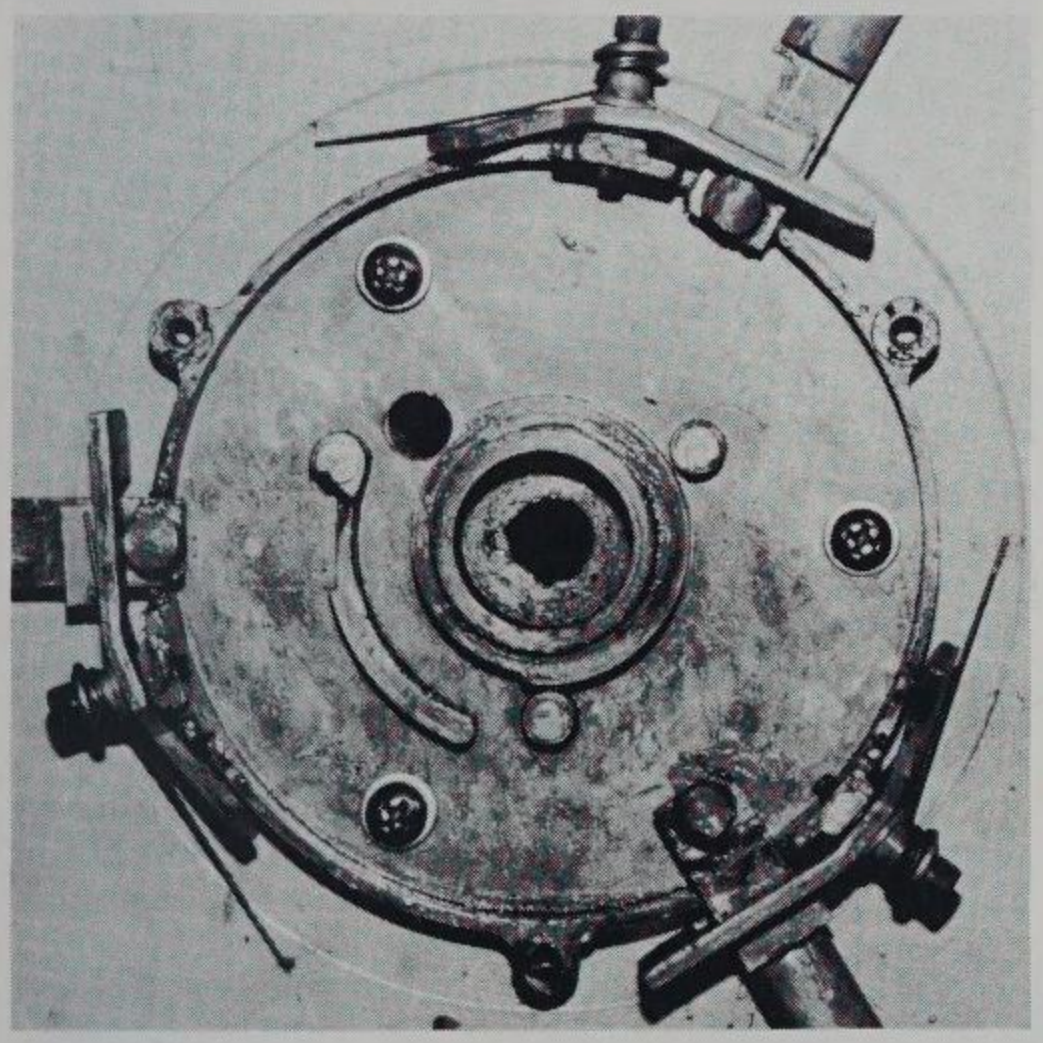
With the back cover removed, as in photograph eight, the heart of this famous rotary combination lock is exposed for all to see. The cam plate that controls the bolts, the driver with its wide gate, the "loaded" fence, and the three external relockers can all be seen.

In photograph nine, the driver and entire cam assembly have been removed. We can see where our hole broke through the lockcase "right on the money." An advantage of drilling here is that you do not have to drill through the cam plate. There is a slot cut out in the cam for the fence to travel in—you can look right through this slot and see the fence and wheels.

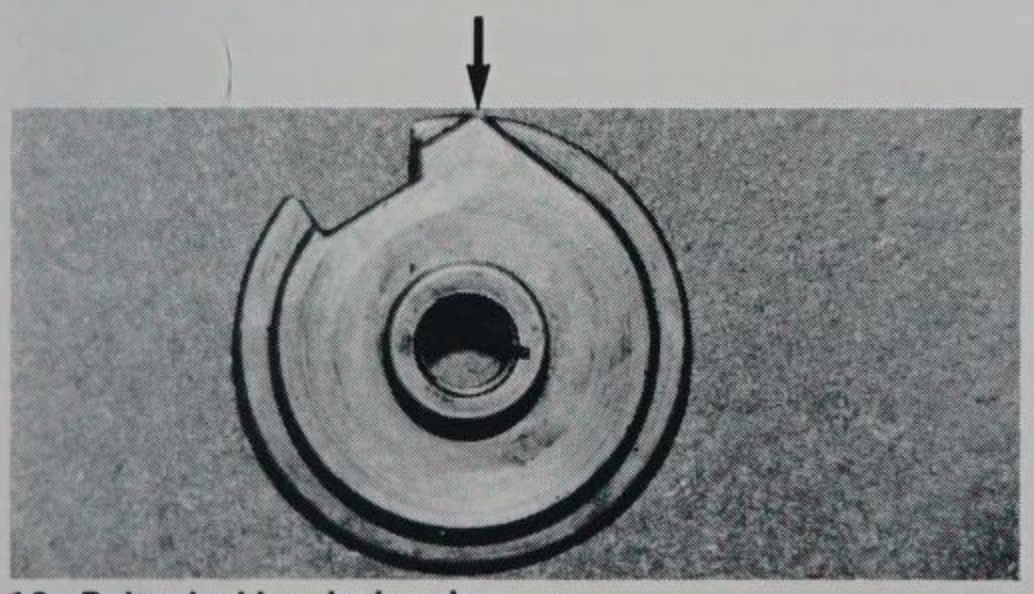
Also visible in this photograph are the three screws that hold the lockcase onto the door. Although this lock can be mounted in three different positions, this is the way most of them left the factory, with drop-in around 14 or 15.



8. 180-55 lock with back cover removed.



9. The driver and cam assembly have been removed and lockcase holder screws are visible.



10. Bolt relocking device close-up.

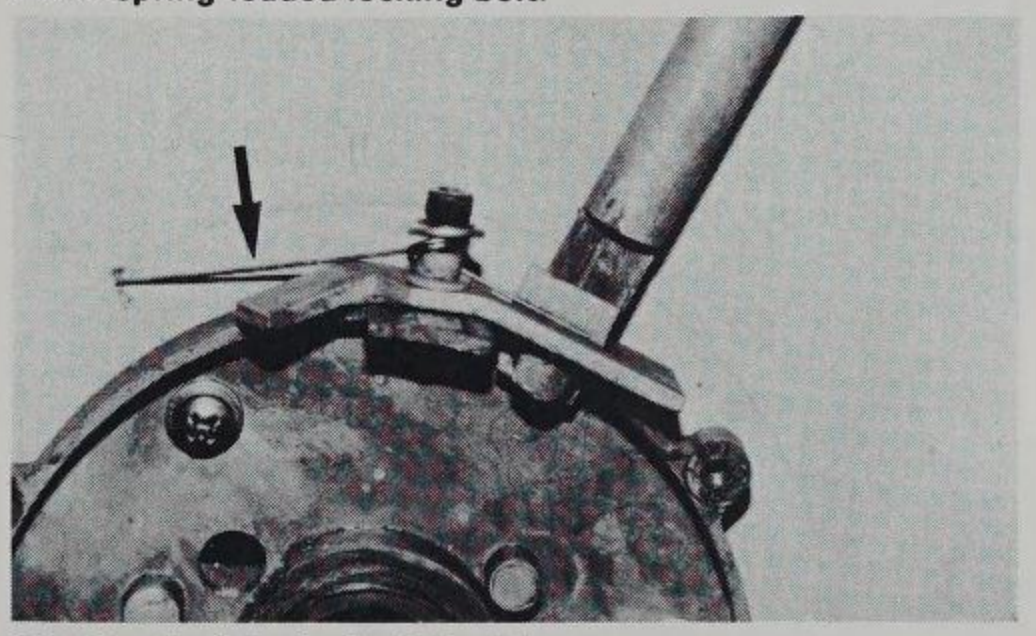
Photograph 10 gives us a close-up of the relocking device on one of the bolts. I suppose you could say these bolts are double relocked. The bolt itself is spring loaded and shoots out of its own accord when the cam is removed. The relocking device adds additional security by thwarting attempts to fish the bolts back. The arrow is pointing to the spot I would shoot for to neutralize the relocker. Hook it, pull it back, and tie it off; or clamp vice-grips on the wire, keeping the relocker pulled back.

One of the spring loaded locking bolts is displayed in photograph 11. For some reason, Diebold saw fit to harden these bolts. I'm no metallurgist, but it seems to me that a hardened bolt would be much more likely to shear off under shock attacks than would a mild steel bolt. By shock attack I mean for example, welding a piece of railroad track to the door and going for it with a sledge hammer. (This has been done, by the way, successfully.) Do any of our readers have a definitive answer to this?

Photograph 12 is a close-up of the backside of the driver. The arrow is pointing to an important part of the driver that is often overlooked. It is the tip of this upside-down V, or lobe, that starts the chain of events which actuate the lever. As the tip of this lobe begins to wear down and lose its sharpness, it will gradually fail to consistently actuate the lever. In other words, the darn thing won't drop in all the time.

The simple solution is to replace the driver. Cost: About $20. Unfortunately, a great many of these entire locks are replaced, simply because most lock and safemen do not understand them. And with a current price tag of well over $300, this is like paying for a new engine when the problem is merely a faulty spark plug.

11. A spring-loaded locking bolt.



12. Detail of the back of the driver.

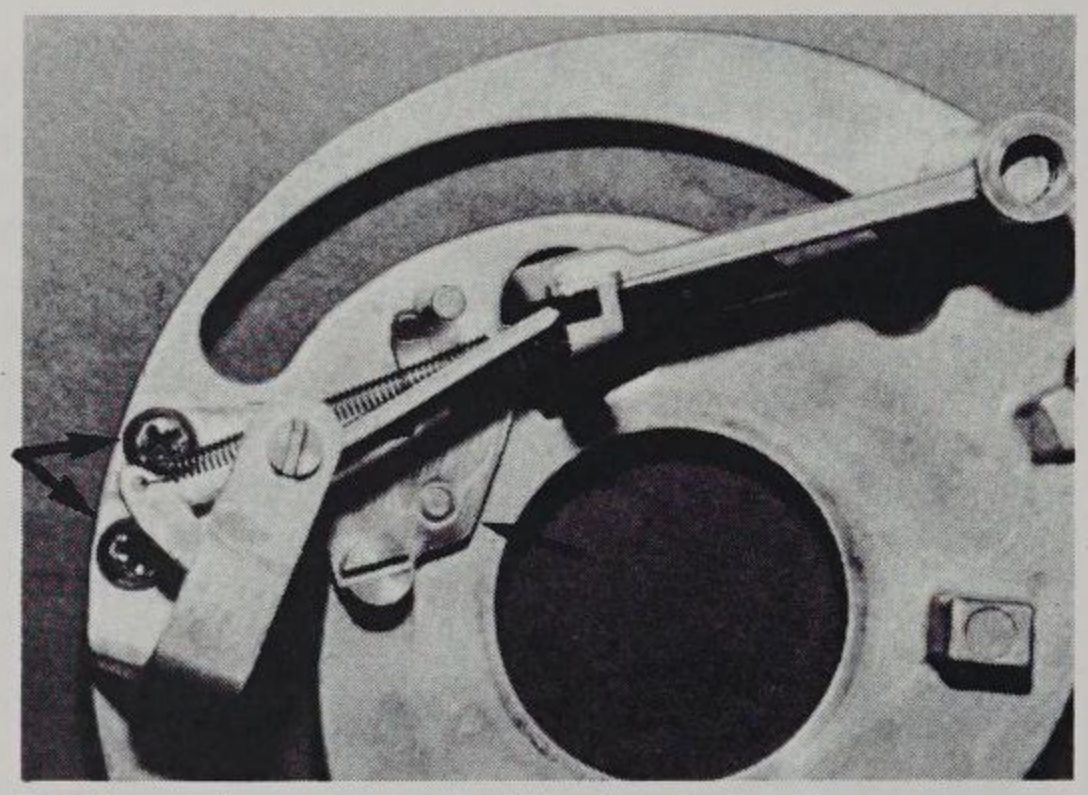
In photograph 13, we have the five main components that do drop-in duty. From left to right they are the trunion, trigger arm, extension spring, lever actuator, and lever. Below these parts are the oddball screws that hold everything together.

Photograph 14 gives us a close-up of our five soldiers in combat position. The arrow is pointing to the part of the trigger arm that is contacted by the driver lobe. When this arm is lifted to a sufficient height, the spring pressure on the lever actuator is suddenly inverted, causing the lever to jump or bounce downward. If the wheel gates are lined up the lever fence will jump into the gates and stay there, allowing the cam to rotate. If the gates are not lined up, the lever jumps down, the lever fence hits the edge of the wheels, and the lever bounces back up into the

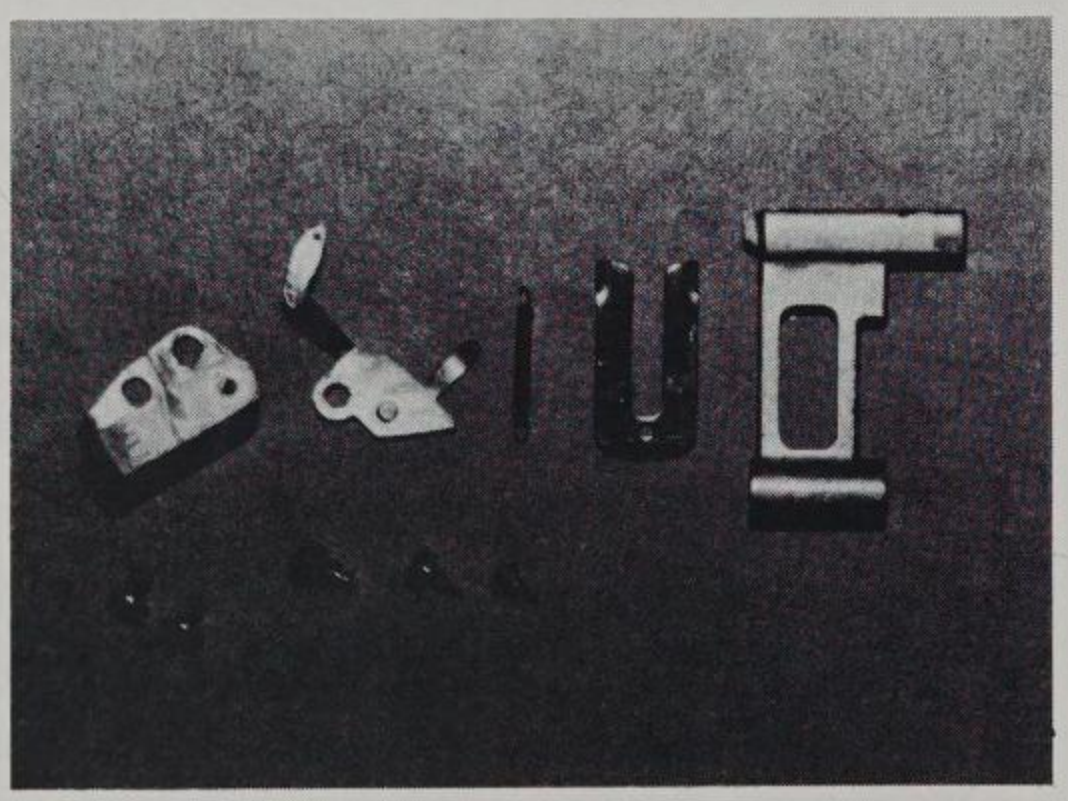
"loaded" position.

If you have a problem getting one of these locks to drop in, and your diagnosis reveals a badly worn driver lobe; the following little trick may get you by until parts arrive. Simply loosen the two phillips head screws that the double arrow is pointing to in photograph 14. Slide the trunion down a little, and retighten the screws. It takes just a fraction of an inch and there is usually enough play in the screw holes to make this adjustment. Now try the combination. If it drops right in a dozen times consecutively, I would say the mission is accomplished. If not, then you may have to do a little modifying. If you don't feel comfortable doing this, then don't. You had better wait for parts.

In the field, you may notice the absence of a change index on the dial ring. Some have it, some don't. If neccessary, make your own change index 6½ numbers to the *right* of the opening index. When changing the combination, it is a good idea to start off by setting it on 50. This allows you to get a "feel" for the lock, and will let you know whether or not it will change right on the mark.

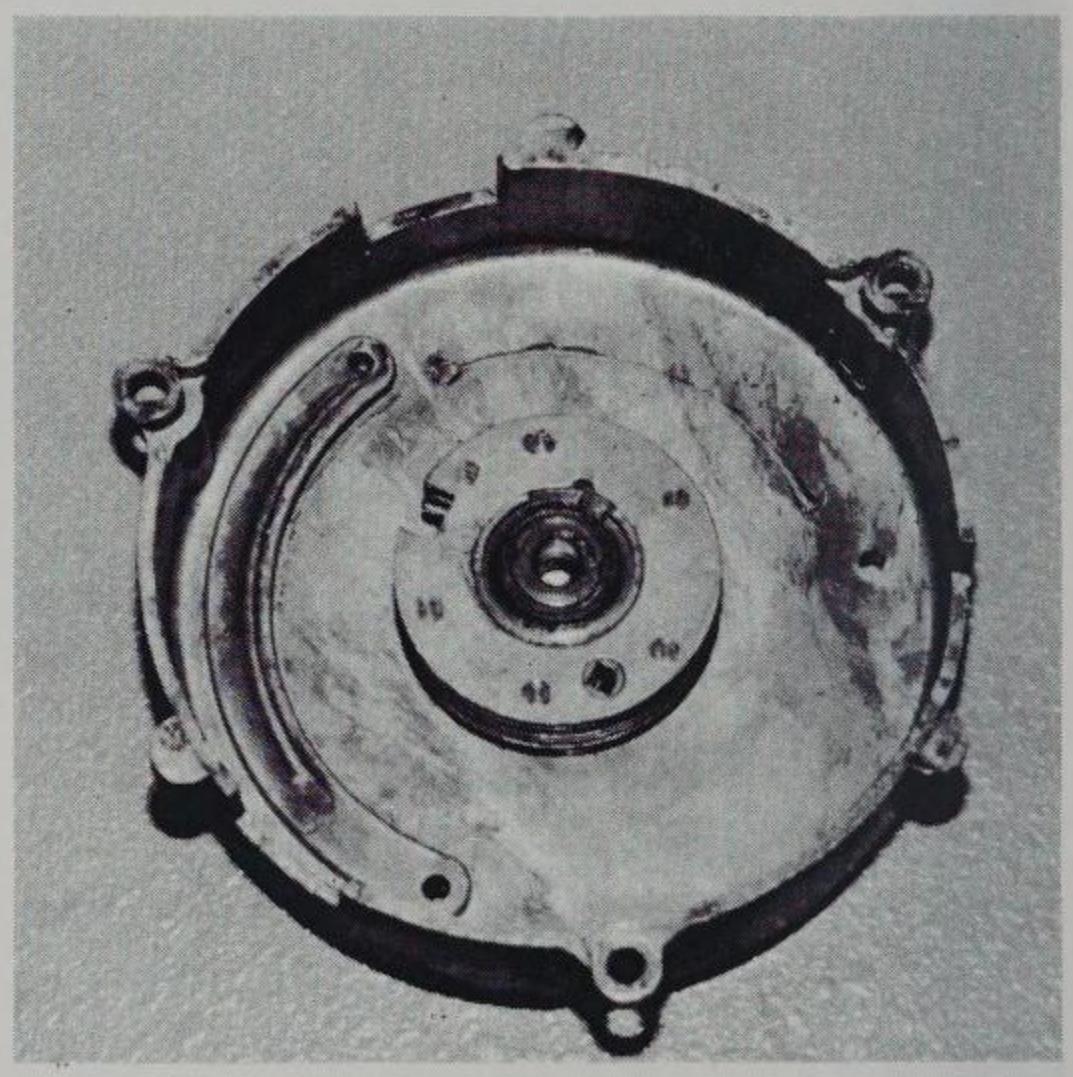


13. Five main components of the drop-in function.



14. Arrow indicates part of trigger arm contacted by the driver load.

Photograph 15 shows the inside of the back cover with the three 1¾" wheels attached to it. Earlier in the article I made reference to a problem that can develop from the back plate being attached directly to the back cover. Over an extended period of time, the weight of the back plate can eventually cause the screw mounts on the back cover to crack or break off completely.



15. Inside of back cover with three 1¾" wheels attached.

I used to think this happened from repeated overtightening of the back cover screws. But since this problem seems to occur only on the larger doors (with large, heavy back plates), and rarely, if ever on small doors, I am now convinced the fault lies in this method of attaching the back plate.

Another problem I have run into is the back cover loosening up just enough so the driver does not pick up the wheels. You can usually overcome this by holding constant inward pressure on the dial, and dialing the combination very slowly.

In closing, allow me one last comment. I have always enjoyed the battle between drill bit and hardplate. Truth is, I have spent a ridiculous amount of time figuring out ways to penetrate various barrier materials, and I take great pride in saying that I have never failed to achieve penetration. But, I must say that if I run into one of these doors with the relockers set off, up for sale goes the lawn mover, and out comes the mini-lance. I have yet to use one in the field, but the day is surely coming. ■

Although I am proud of this article for its step-by-step photos of the opening and for its excellent servicing tips, I am a little embarrassed at the number of these doors I drilled. On a safe with a functioning 180-55, there is no reason to break off the expensive dial and drill the tough door. Much, much better to side or top drill to scope the change keyhole. The drill point to side drill is 4-1/4" back from the face of the door, 1/2" above the dial center. The wheels read out in the actual sequence of the combination.

Six-Sided Safes

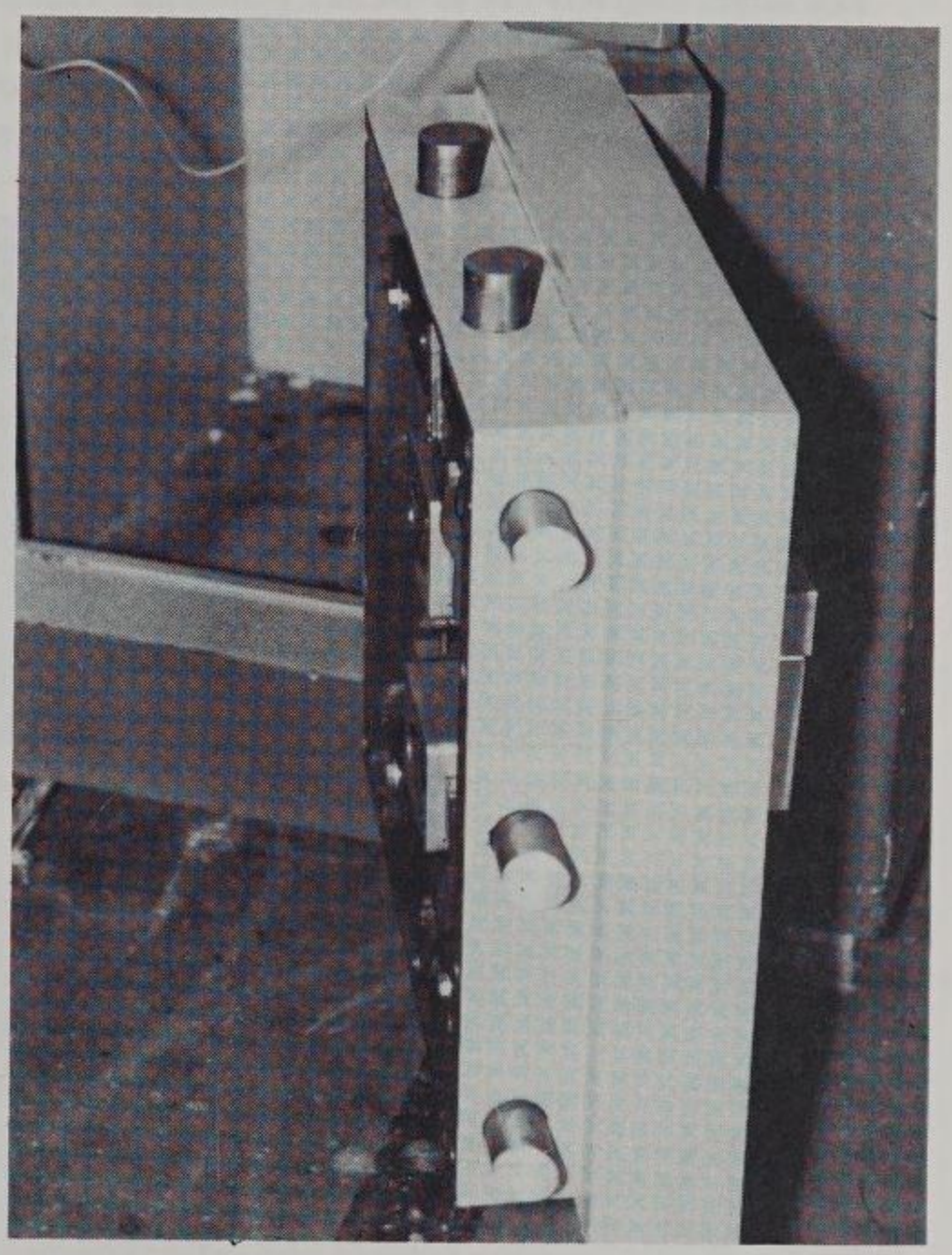
"The best thing to do is to familiarize yourself with these containers at every opportunity. Take pictures, make diagrams and analyze, analyze, analyze."

by Dave McOmie

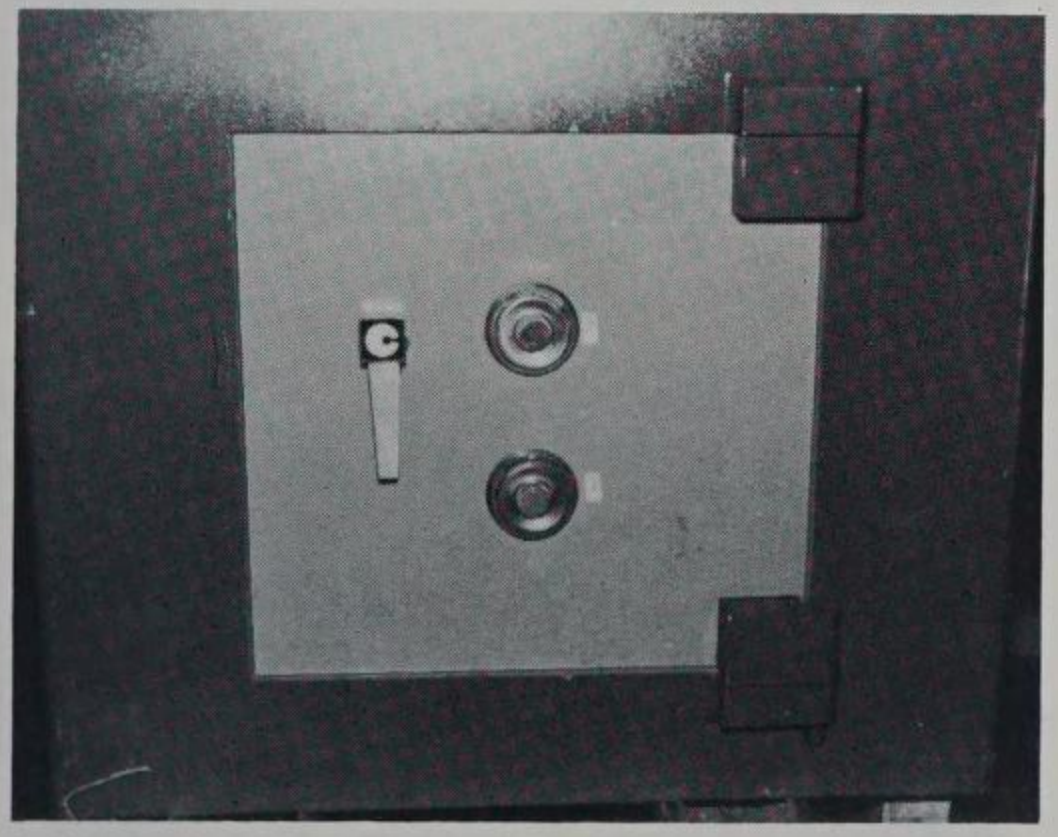
There seems to be a growing curiosity among locksmiths concerning the imported "SIX-sided" safes. Names like Lord, SLS, Kaso, ISM, and Tann, among others, can be heard in discussions at any convention. While there is great interest, there is also great apprehension, and for good reason. When one of these jewels locks up, it is serious business. You don't just plunk a hole through the door and watch the fence drop in.

No sir; with things like tempered glass plates, remote cable-released relocks, and intricate keylocks, the ballgame becomes a little more complicated. We Americans have to completely rethink our approach. In most cases, penetrating the door is out of the question. Side and top attacks are the norm, which poses another problem, the fact that a whole new array of tools becomes necessary before you can even consider going for it.

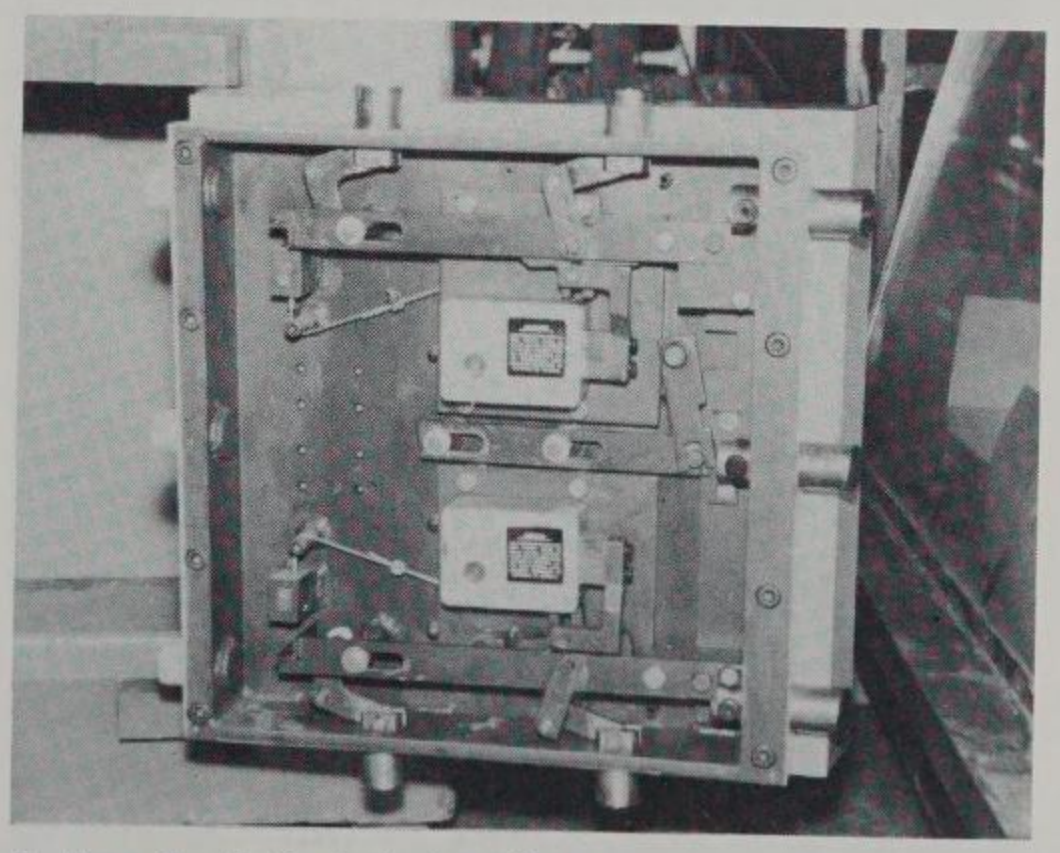
A flexible fibre-optic searchscope with a 150 watt power source, assorted rigid scopes, an electro-magnetic



2. Side view of an impressive door with massive bolts



1. Front view of a super-duper Chubb.



3. Rear view in the locked position.

drill press, a vacuum press, long and very long drill bits, a mini-lance, and assorted bypass tools are just some of the exotic weaponry an X6 specialist may possess.

Even more important, however, is the knowledge; not only of how to use the tools properly, but of the container itself. Without this, you are going in blindfolded; and in this event the chances of a mishap shoot up exponentially.

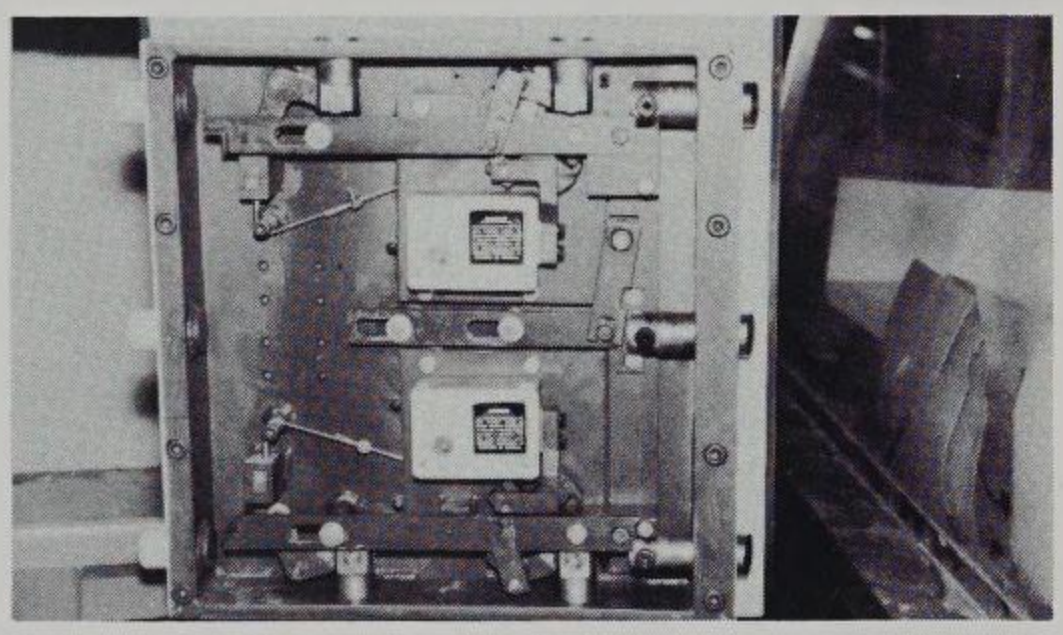
The best thing to do is to familiarize yourself with these containers at every opportunity. Take pictures whenever possible, make diagrams, and analyze, analyze, analyze.

You might even buy one to use as a guinea pig. Tear it completely apart (you will be surprised at the things some manufacturers hide), put it back together, lock it up and drill it open! Repair it, sell it as slightly used, for more than you paid for it, and go buy a different one!

Sound crazy? I suppose it is, but gaining experience in this area is difficult, to say the least; and besides, it's great fun! And with opening fees starting in the $1,000 and up range, it is also monetarily rewarding.

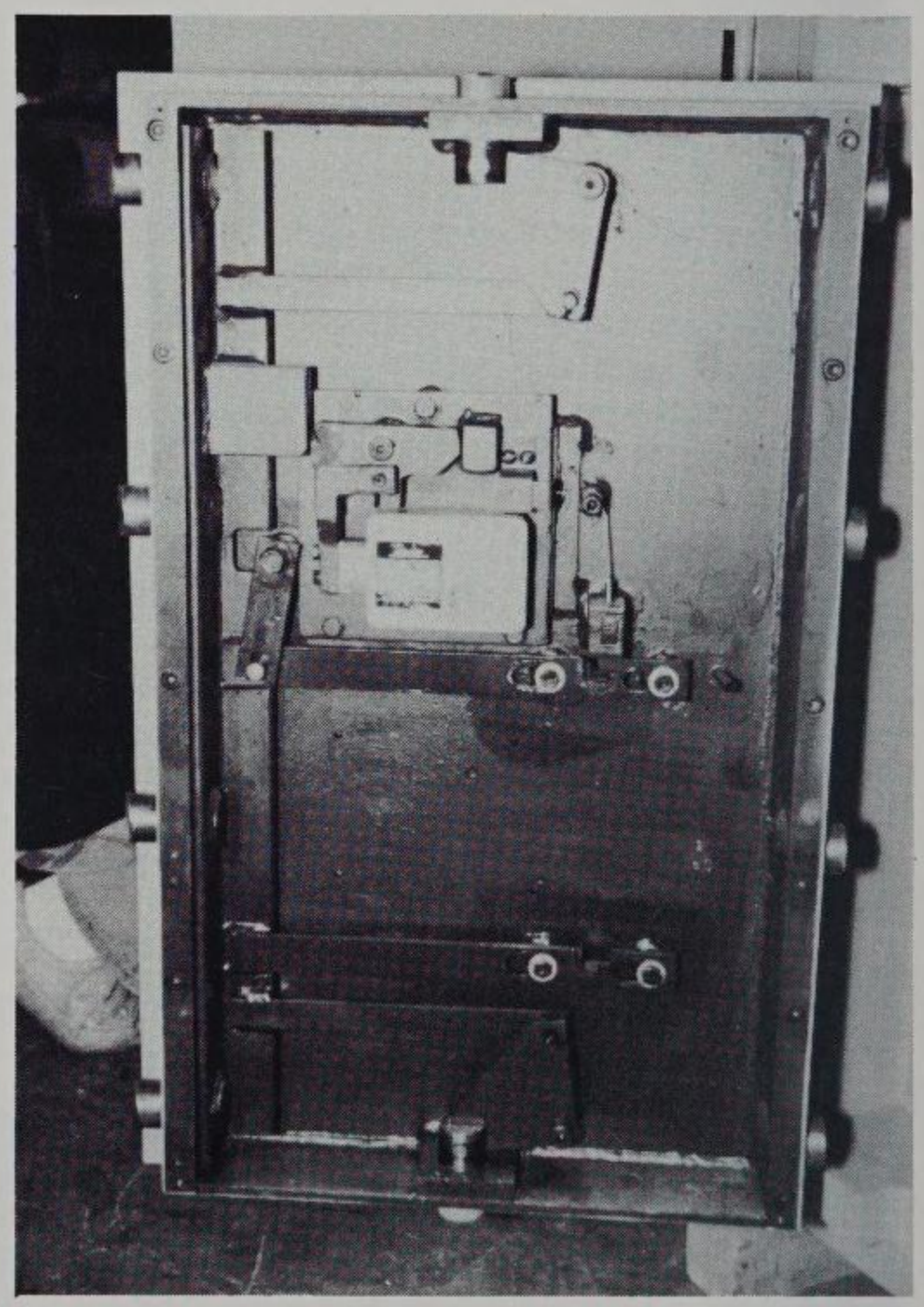
I am going to leave you with some photographs of a couple six-sided containers. Both were manufactured by Chubb of Canada, (one is actually a Chubb-Mosler-Taylor), and both are of extremely high quality.

Notice they are both equipped with high quality vault locks instead of safe locks. As an exercise, see if you can identify the locks; find the relockers; and figure out how the boltwork operates. Now if this has piqued your interest, go buy one and open it! ■

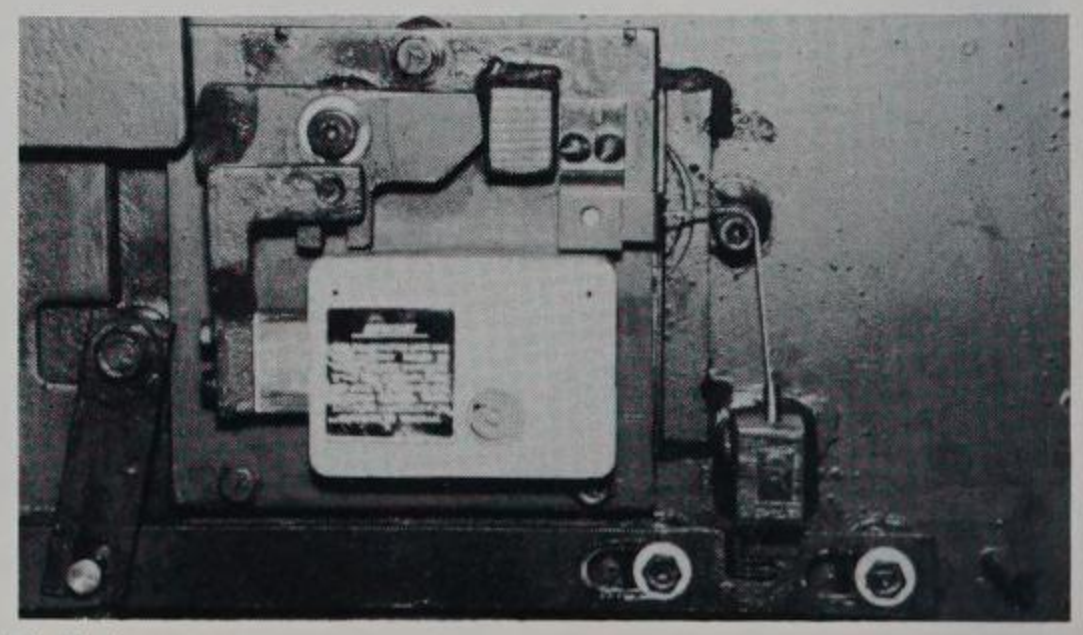


4. Rear view. The combination locks have been opened and the handle thrown, retracting the bolts.

5. A left hand swing Chubb-Mosler-Taylor (CMT).



6. An inside shot.



7. A close-up.

For the most part, six-sided safes have turned out to be more bull than beef. Cracksmen quickly learned that with few exceptions, X6 safes are fairly easy to drill. The trick is having long scopes, a good resource library, and a network of fellow techs to call for supplemental info and moral support.

A Slick Trick

"Once in a while things will just click and make you look and feel, well, like a magician. You can either get very lucky, or you can use a slick trick."

by Dave McOmie

I have always loved safework and magic. They are really complementary art forms. In those early years my heroes were Alexander Mundy and Harry Houdini. These two men (one a fictional super-thief, the other perhaps the greatest magician/escape artist who ever lived) did much to damage the reputation of locksmiths and safemen the world over. Yes, by making it look so easy to open or escape from any lock, safe or vault, they put the idea into the public mind that a "real pro" can do it in just a minute or two.

Now, on a safe job a customer begins to question your competence if it isn't open in ten minutes. It can be very frustrating.

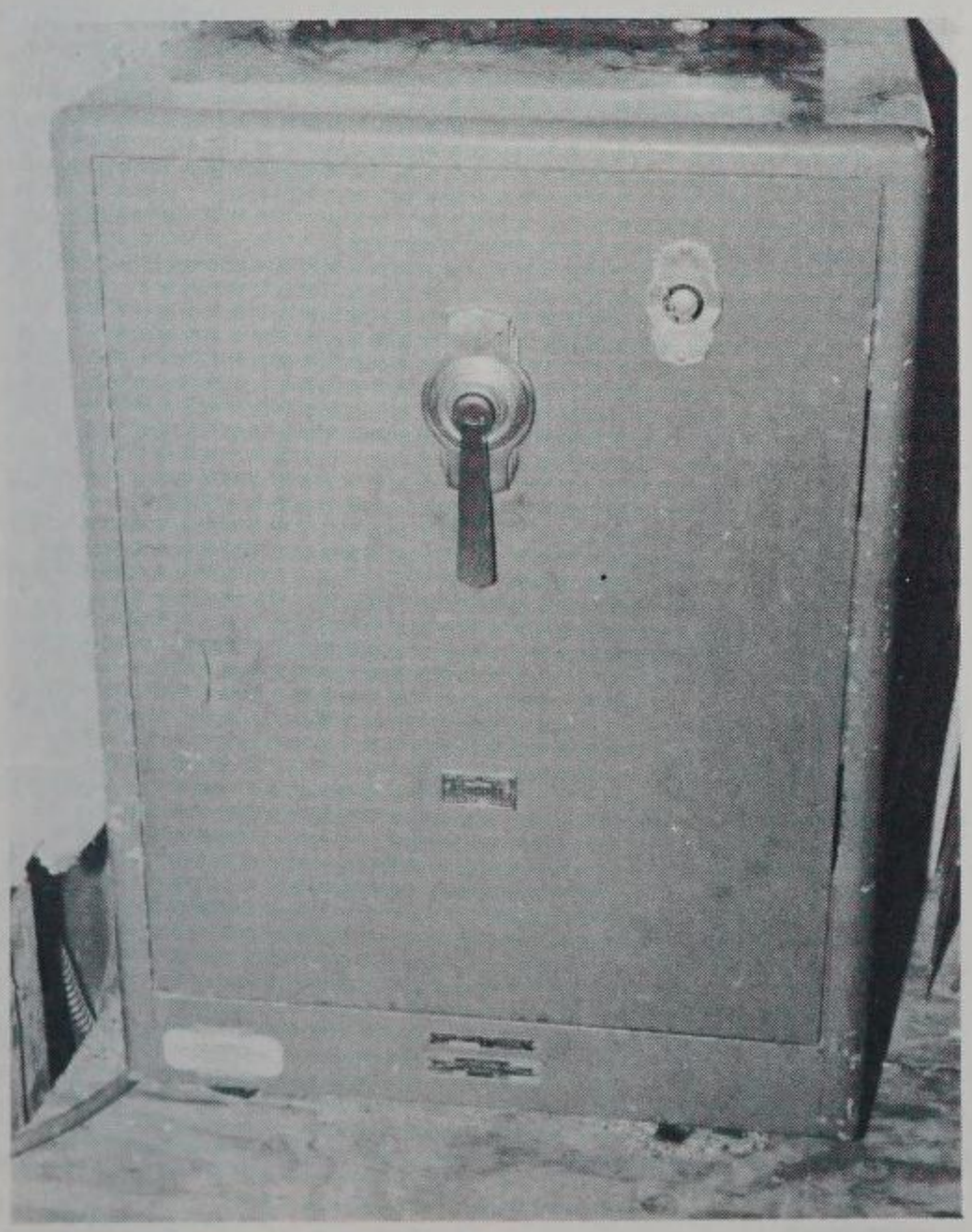
Once in a while though, things will just click, and make you look and feel, well, like a magician. Other than overcoming a simple malfunction, there are only three ways this will happen: 1) You can whip off a five-minute manipulation. 2) You can just plain get lucky. 3) You can use a slick trick.

In my own case, #1 occurs rarely; #2 never occurs; but #3 is my specialty and occurs often.

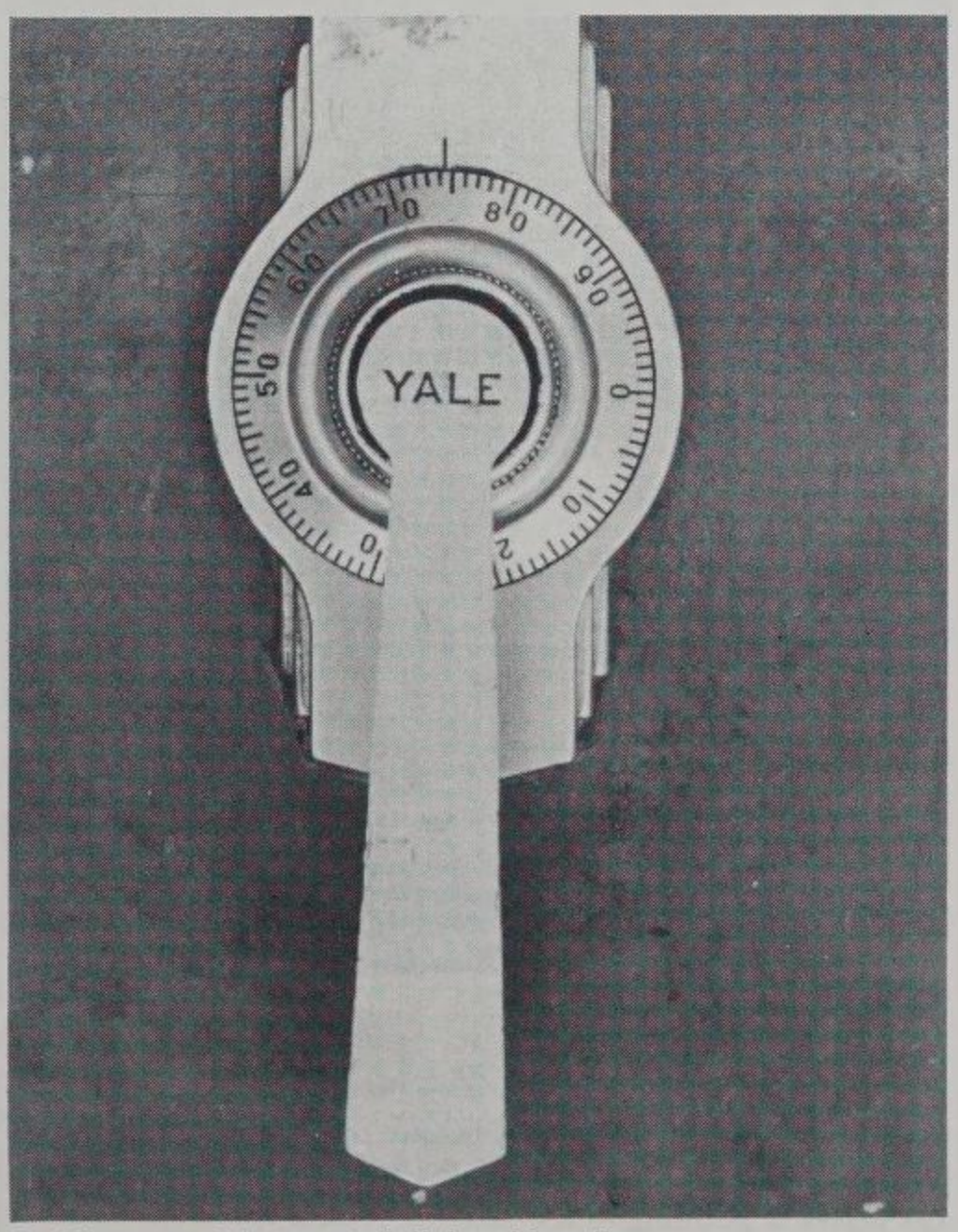
This month we are going to unveil a very special slick trick that works like magic on a very special safe, the infamous Remington Rand with the integrated dial and handle. We will close this discussion with an in-depth examination of the combination lock that was an integral part of Yale's #073 and #074 lock assemblies.

Photograph one is of a small Rem Rand that I opened recently for Portland's largest locksmith shop, Atlasta Lock & Safe Co.

Photograph two is a close-up of the integrated dial and handle. This is the key to proper identification. It has been my experience that a flat, nickel-plated handle with "Yale" engraved in it indicated the presence of a #073 or #074 on the inside. A round handle with "Yale" engraved in it indicated #072½. A handle, whether flat or round, with S & G engraved in it, indicates the presence of an S & G #6727. But nevermind, there is a way to open these little monsters without drilling through the door at all!



1. Small Remington Rand safe.



2. Close-up of integrated dial and handle.

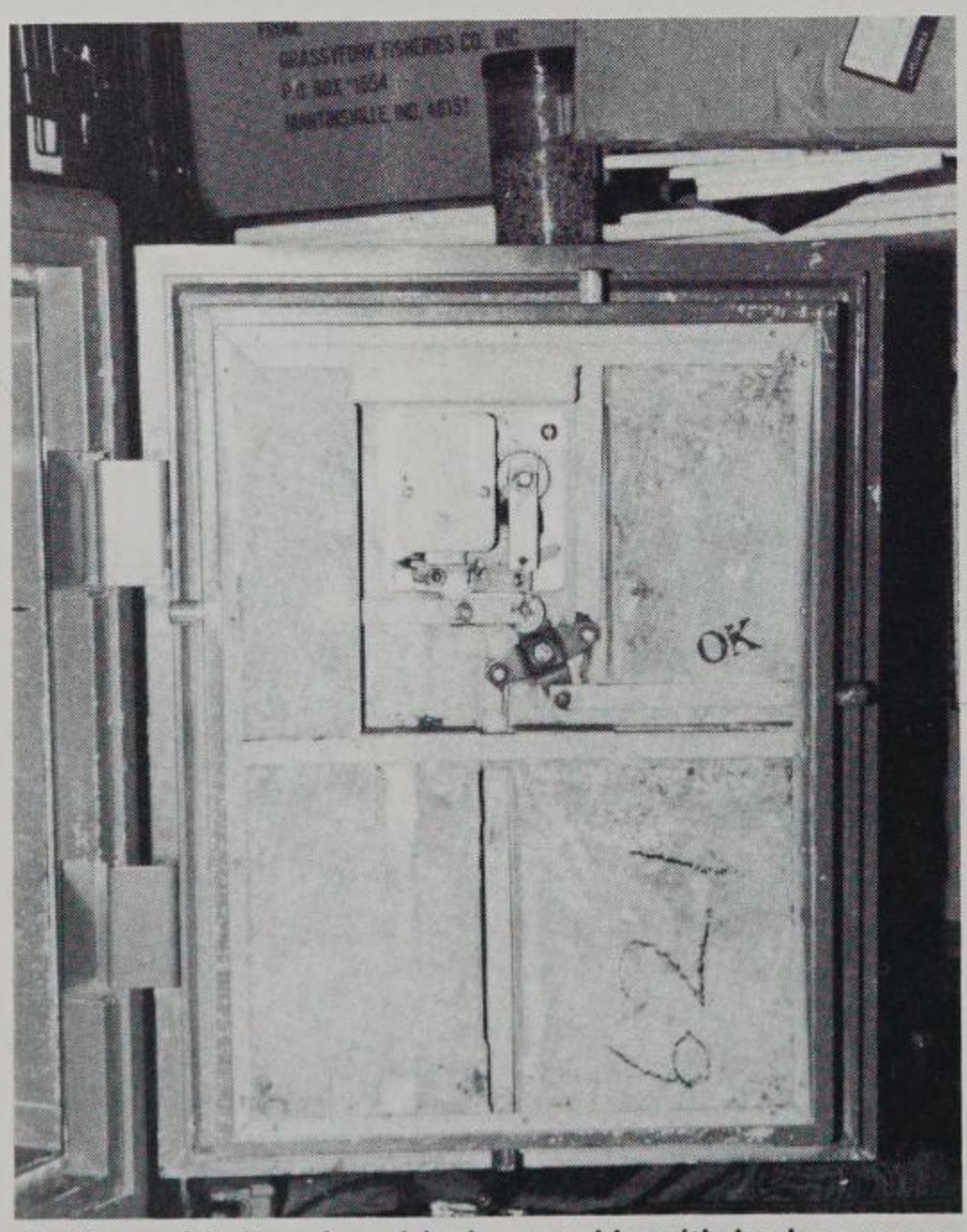
I'm not kidding when I say that our subject safe this month was drilled open in less than two minutes. I defy Mundy or Houdini to top that!

What I did was drill a hole through the side of the safe aiming for the side bolt on the hinge side, and I hit it. My drill bit went through the outer skin, the insulation, the inner skin, into the bolt receptacle, and stopped against the bolt. I knew it was right on the money because the handle jumped a little bit. My drift punch went into the hole and the safe was open.

In photograph three, the back panel has been removed, giving us a clear view of the boltwork and lock assembly. Notice there are four locking bolts; one top, one bottom, and one on each side. The general location of all four bolts can be deduced from dial center, regardless of door size. Remember this when you have a disconnected bolt to hunt for. The door does *not* have to be peeled or destroyed.

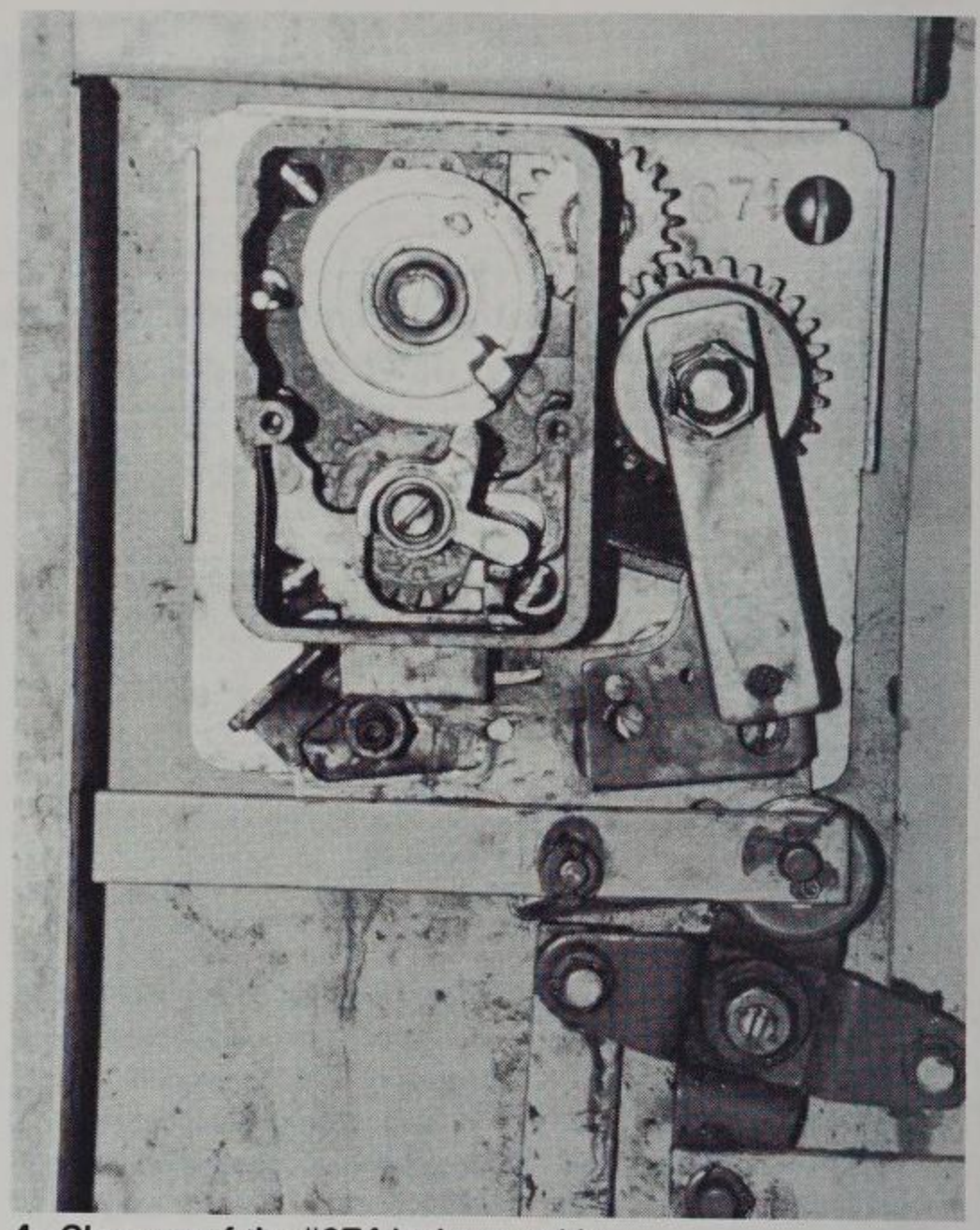
Photograph four gives us a close-up of the #074 lock assembly. This is an offset, or transmission lock, which means the lock does not sit directly behind the dial. Actual wheel center is 1⅞" over, and ½" up from dial center. (This particular lock has been modified and a few parts are missing, so we will hold off discussing it in further detail for a few minutes, until I can pull an original one out of my collection for dissection.)

Those of you with keen powers of observation may be wondering about the bent piece of metal just to the left of the lockbolt. Well, this sliding piece is what the lockbolt blocks when it is in the extended position. When the lockbolt is retracted, this piece will slide freely, the handle can be thrown and the bolts retracted.



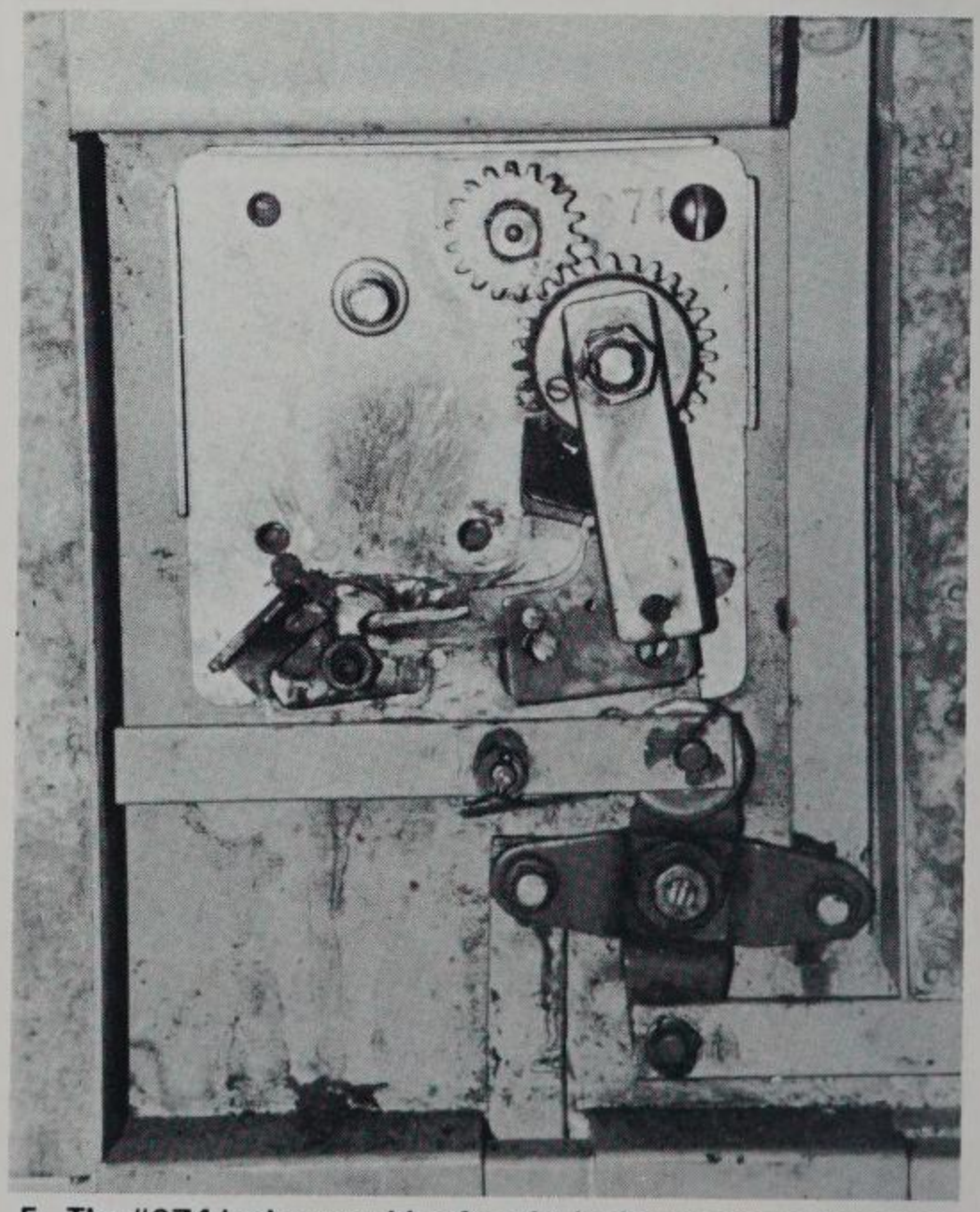
3. View of boltwork and lock assembly with back cover removed.

When I punched on the sidebolt, something had to give, and in this case it was the side—it broke. In this photograph, the lockbolt is extended, yet the locking bolts have been retracted. The arrow is pointing to the external relocker.



4. Close-up of the #074 lock assembly.

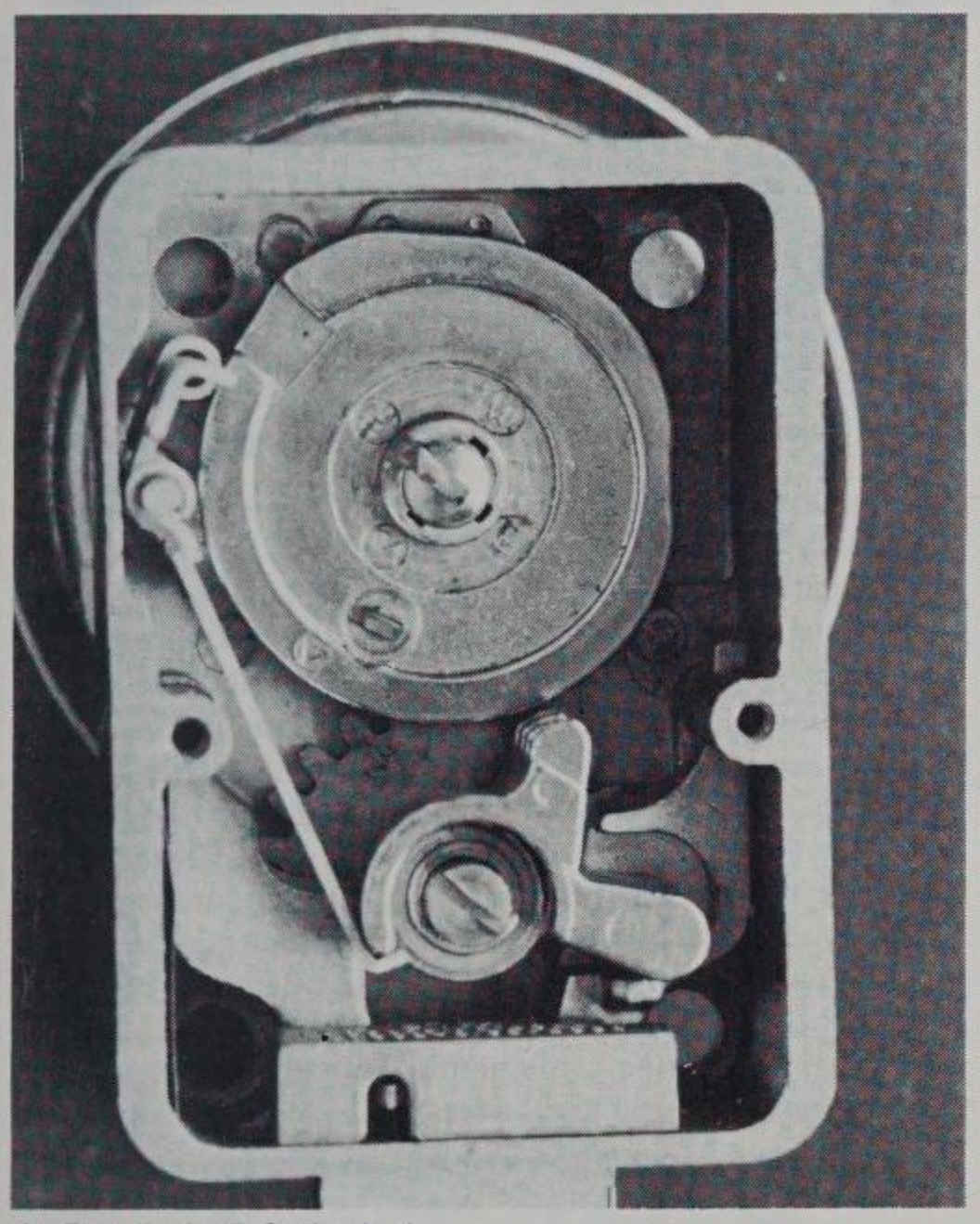
In photograph five the lockcase proper has been removed from the #074 lock assembly. The gearing can clearly be seen, as can the broken slide piece. Normally, this piece does not break, but as it turned out, this door had been drilled before.



5. The #074 lock assembly after the lockcase proper has been removed

Some guy did it the hard way. He drilled a series of holes, apparently aiming for the lockbolt. A couple of holes went through the slide piece and disconnected it. Imagine his surprise when, out of frustration he grabbed the handle, gave it a jerk, and opened! That kind of blind luck I'll never see! To effect the repair, the sliding piece was weakly brazed back together, which explains why it broke again under my gentle ministrations.

There is one more thing I should point out in photograph five. The gears are clearly marked for ease of reassembly. The small gear has an X and a diamond engraved in it, which



6. Detail of a B Series lock.

correspond to an X on the large gear, and a diamond on the driver. If these are properly matched during the reassembling process, the lock should be in correct time.

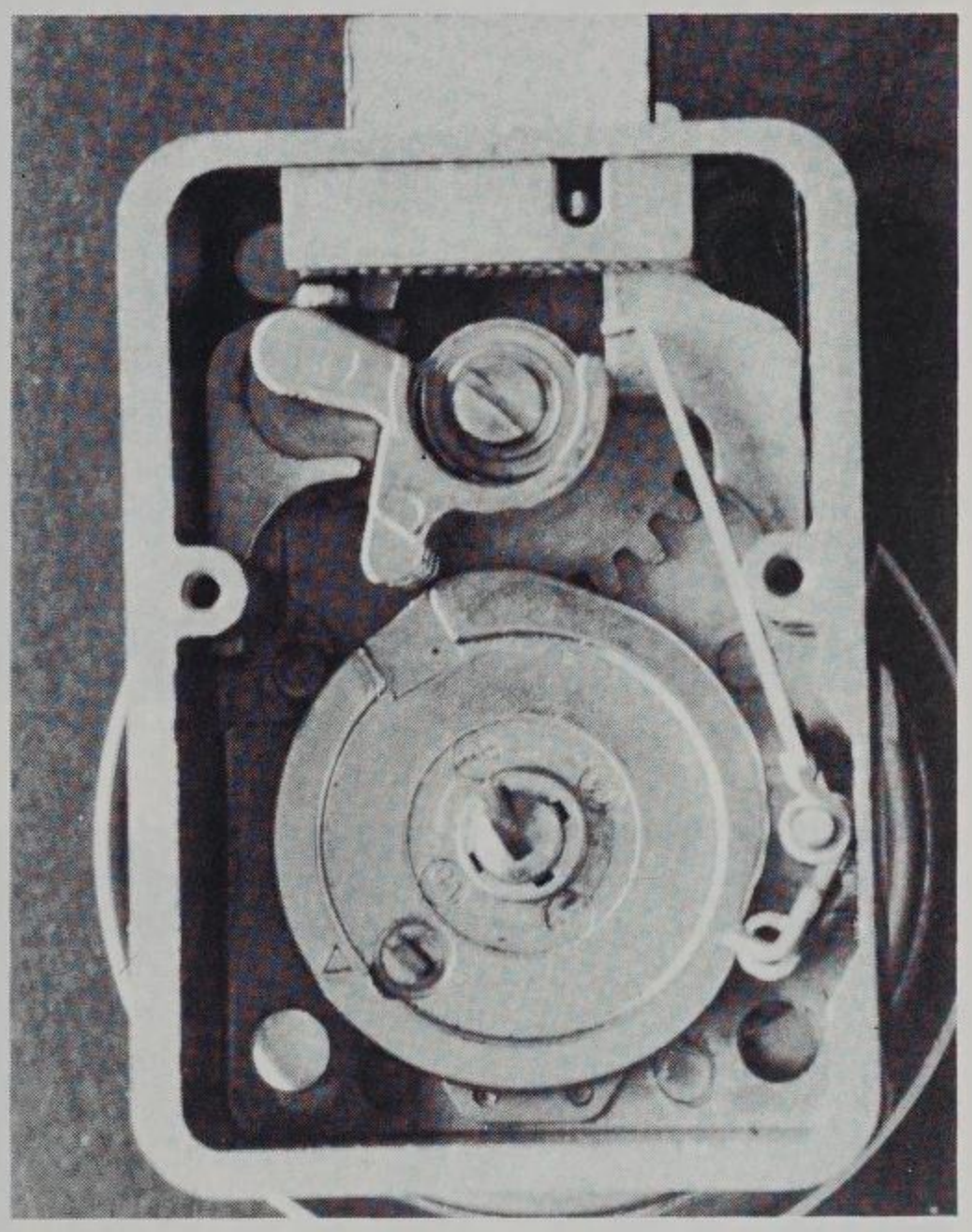
As I said earlier, the lock assemblies used in these particular models of Rem Rand safes were the Yale #073 and #074. To this day I do not know the difference between them; if any of you do, please drop me a line.

The locks themselves are a modified version of the Yale B40. The modification that converts a B40 into a component of the 073/074 lock assembly is simple: the rear right hand corner of the lockcase is milled away to allow engagement of the small gear to the drive cam.

A discussion of the B series lock, its distinctive features and unusual operation, will further our understanding of the 073/074. In the following sequence of photographs we will explore in minute detail, the workings of this unique lock.

Photograph six is a close-up of the B series lock from my personal collection. (This one is actually a three wheel #B30, which is identical in every other respect to the four wheel #B40). One arrow is pointing to the flat spot on the driver. The other arrow is pointing to the secondary fence. In this position the hook on the lower section of the secondary fence prevents the primary, or geared roller fence from contacting the wheels. You may also notice that the gate in the drive cam is not cut all the way through. More about that later.

In photograph seven, the dial has been turned left, almost to the drop-in position. At this point several things happened. As drop-in was approached, a hump on the drive-cam pushed the primary fence farther away from the wheels. This relieved any pressure, and eliminated the possibility of a bind between the primary fence and the hook on the secondary fence.

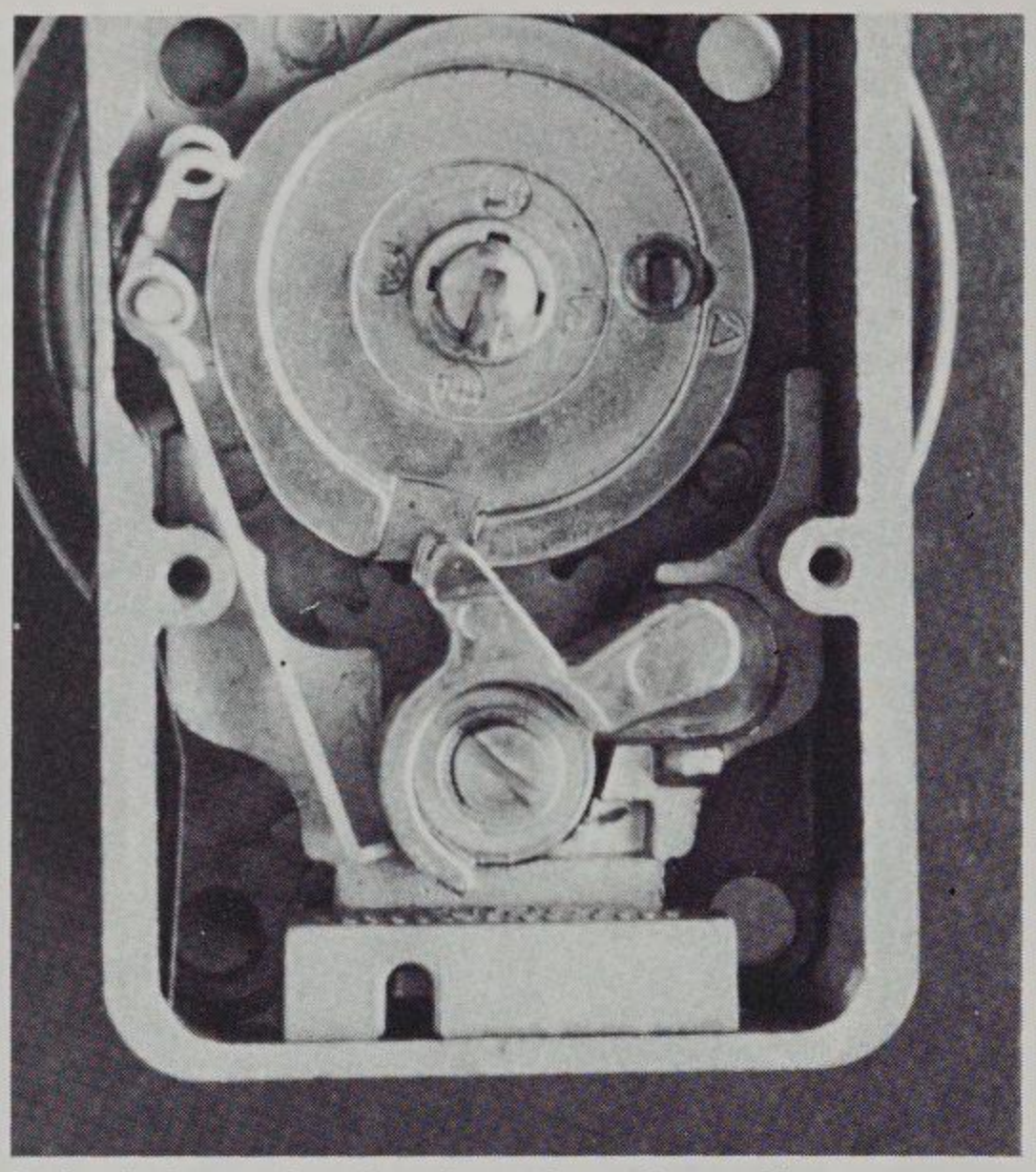


7. Dial has been turned to the left, almost to the drop-in position.

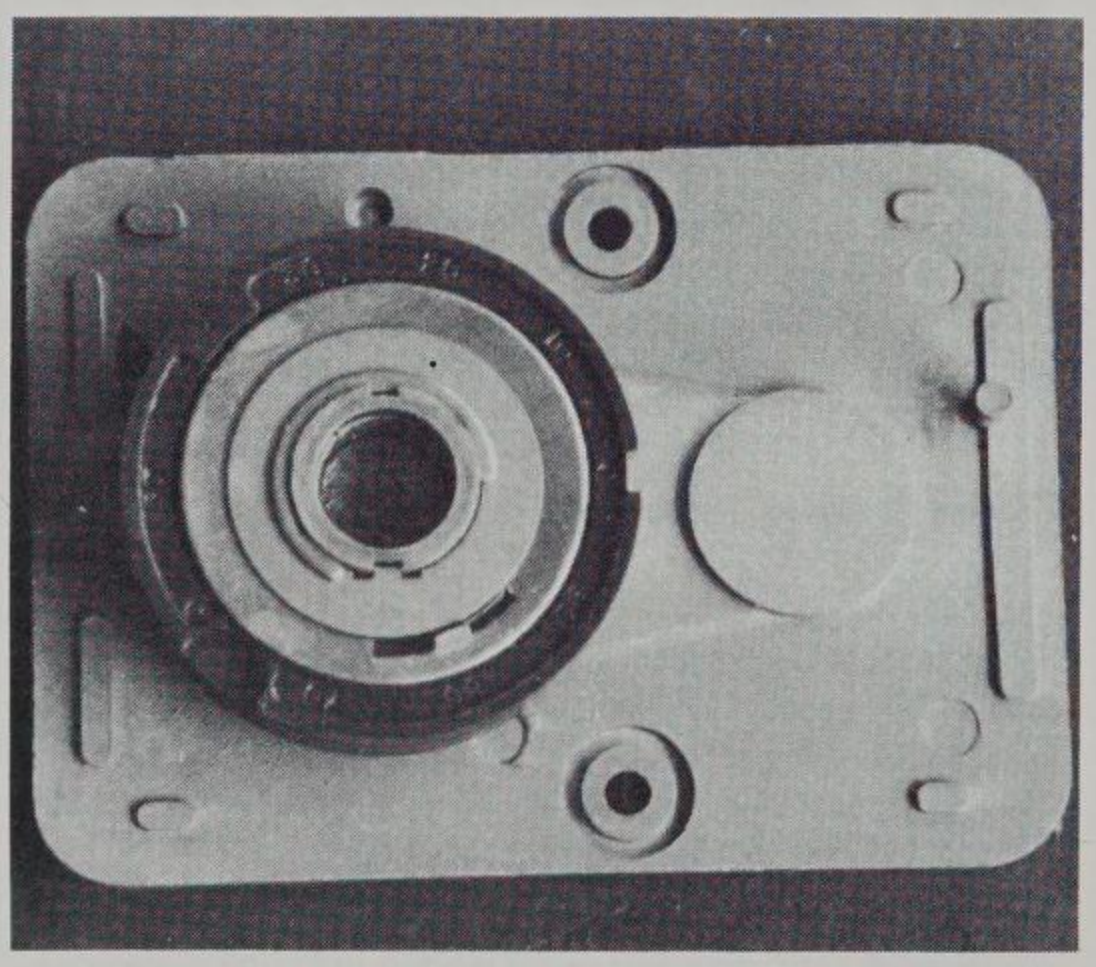
Simultaneously, the top section of the secondary fence dropped-in to the flat spot on the drive-cam. This caused the hook to move to the left, no longer restricting movement of the primary fence. In this position the primary fence is free to drop-in and retract the lockbolt.

In photograph eight the primary fence dropped in. I bypassed the internal relocker, and the lockbolt was retracted. This reminds me to say that I have never seen a #073 or #074 with a relocker inside the lockcase. This may be another minor difference between a B series lock and the modified version that appears in a #073/#074.

We have already observed that the gate in the drive-cam is not cut all the way through. Well, in photograph nine we can see that the primary wheel gates are not cut clear through either. We will see why in the next photograph, but first let's take note of one more thing in photograph nine. Observe the tiny little secondary wheel gates; these are cut all the way through. When the secondary fence drops in, it frees the primary fence, which drops in to the half gates of the wheels and driver. If the combination is dialed improperly, the primary fence remains hooked to the secondary fence, and cannot contact the wheels. It is precisely this feature that makes the lock manipulation resistant. The plastic wheel version carries a U.L. Group 1R label, the brass wheel version carries a U.L. Group 1 label.



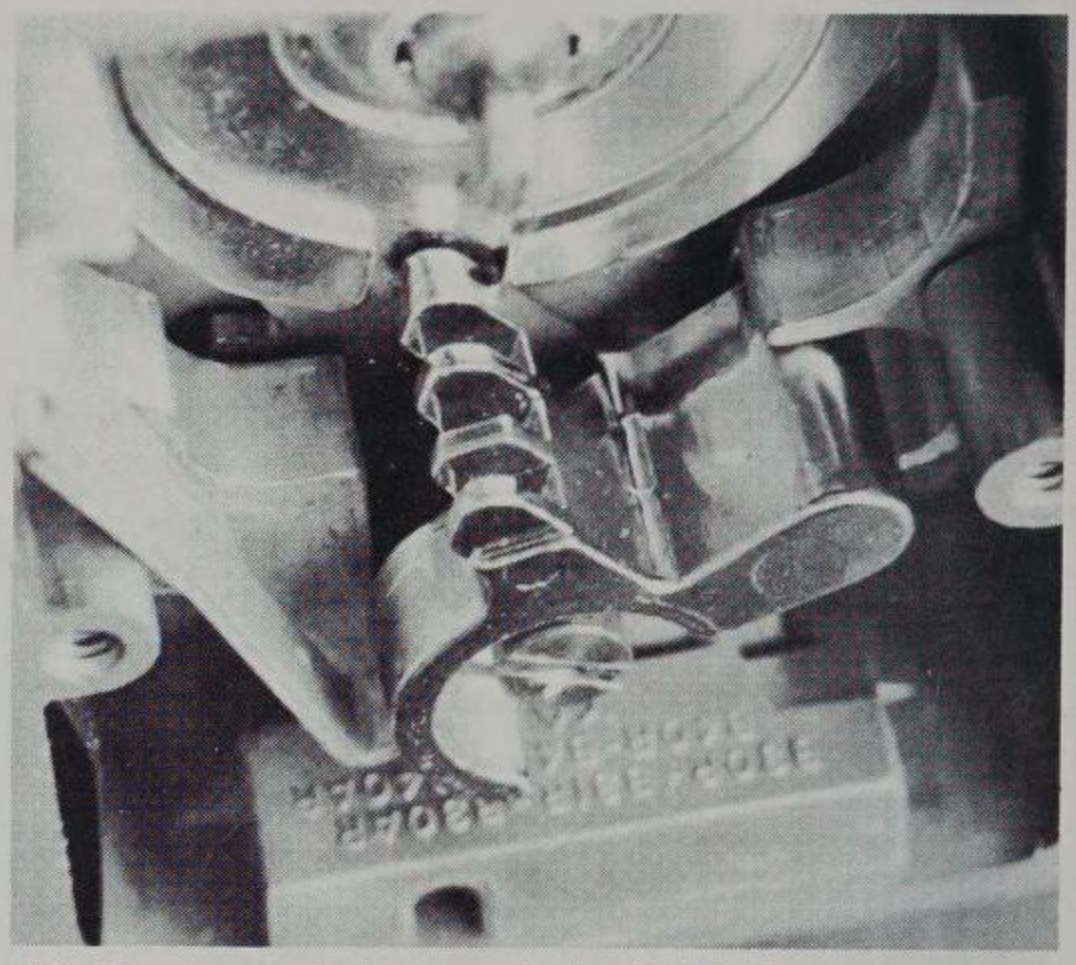
8. Lock shown after the primary fence dropped in.



9. Primary wheel gates shown are not cut all the way through.

Photograph ten makes clear just how a lock with "half gates" can work. As you can see, the primary fence itself is slotted to correspond perfectly with the half gates.

In photograph 11 we are looking at the top section of the secondary fence. We can see the bar that drops in to the secondary wheel gates. We can also see the secondary fence springs. Concerning these, I offer this word of advice: If, while changing the combination, you develop an urge to take the secondary fence out for closer inspection, don't. Believe me, unless you are Einstein or have a sample lock as a guide, you will *never* get the springs back in properly. Some of you may have noticed way back in photograph four that the secondary fence was missing from the lock—which, by the way, is the principal reason I used my B30 for dissection instead of the lock that was in the safe. I'll bet it was removed by the same guy who hacked it open. When

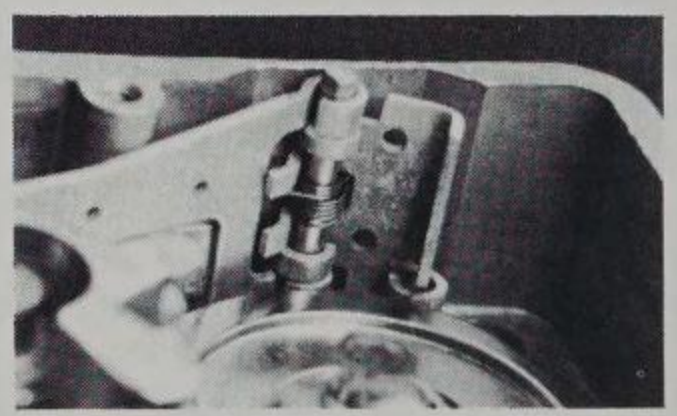


10. This demonstrates how a lock with "half gates" can work.

he couldn't figure out the springs, he decided to leave the secondary fence out altogether. Bad idea. The lock loses its manipulation resistance, and has a terrible tendency to bind. I spent quite a while getting the bind out of the lock. Please, if the secondary fence is functioning properly, leave it alone!

One more thing about changing the combination on the plastic wheels. Keep the wheels in order and take special pains that none of the wheels get turned upside down. These wheels are actually reversible, as both sides of each wheel have a half-gate; but they must all be reversed together for the gates to correspond correctly with the slots in the primary fence. I know it sounds a little confusing, but if you are careful not to get the parts mixed up, you shouldn't have a problem.

When I change the combination on one of these locks, I always first set it on 50 to get a feel for the lock. As a matter of



11. Top section of the secondary fence.

fact, I do this to most of the "out of the ordinary" locks that I run into. It just takes a minute, and if something isn't quite right, it will show up immediately.

Well, that's about it for this month. The next time you have a Remington Rand open, just smile and remember the trick to a two minute opening. By George, this time you are going to look like a magician. ■

A word of warning: this trick works great on the narrow doors, but it can give you fits on the super-wide doors. The trouble on the wide doors is that the locking bolt you are punching on will bend and disappear into the door. Be careful. Confine your use of this technique to doors 30" wide and narrower. (It makes no difference how tall the door is.)

Opening a Hall's Safe

"The procedure I used to open this safe works on fire safes made by Hall's Safe & Lock and the Hall's Safe Co., on units with T or L handles."

by Dave McOmie

One of the more interesting legal battles in the history of our industry was between the Hall's Safe Company and the Herring-Hall-Marvin Safe Company. They had a battle over the name Hall that went all the way to the Supreme Court.

According to some ancient sales literature and miscellaneous historical documents from my library, here is a brief sketch of the events that transpired nearly a century ago:

"In the year 1867, the sovereign state of Ohio gave to five incorporators the name Hall's Safe & Lock Co., which did business until 1892, when the stockholders sold the assets and good will, but retained the capital stock and, as they thought, the name. They agreed to wind up this corporation and put it out of existence—name and all—which they did through the courts of Ohio.

In the year 1896, the same power that gave birth and burial to the old company gave birth to a new corporation, and gave it a name—the Hall's Safe Company.

At this point, Herring-Hall-Marvin, who had acquired Hall's Safe & Lock in 1892, promptly filed suit, claiming rightful sole ownership of the name. The case was in and out of various courts for over 10 years before finally reaching the Supreme Court of the United States in October of 1907. After deliberating through the winter, a verdict was reached, and on February 24, 1908, Justice Holmes delivered the decision of the court.

The court said, "...the Halls did not give up the right to do business in their own name by the part they took when the original company sold out, and the petitioner (HHM) has the right, but not the exclusive right to use the name Hall. Its rights arise by way of succession, out of the priority of the original company, not out of contract."

The only stipulation put on the Hall's Safe Co. by the court was a contingency that forbid them the use of the name Hall. "...either alone or in combination or corporate name, on safes, or in advertisements, unless accompanied by information that the defendant is not the original Hall's Safe & Lock Company or its successor, or that the article is not the product of the last named company or its successors. With such explanation, the defendants may use the Hall name...."

Under these guidelines, the Hall brothers came up with the logo shown in photograph one.

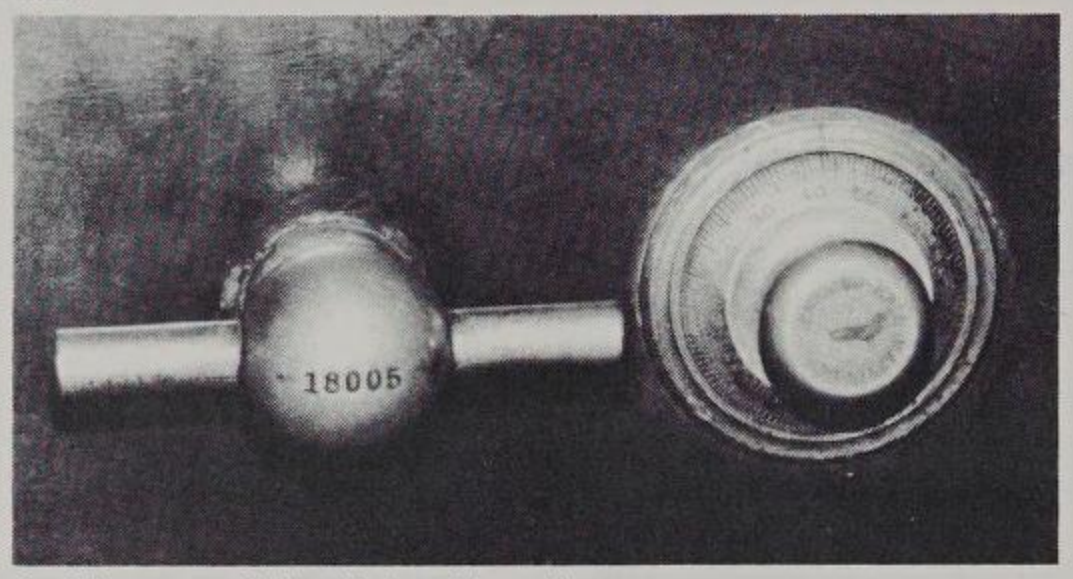
With this little history lesson under our belt, let's look, in photograph two, at a Hall's safe that I opened recently.

1. Hall Brothers logo.

This safe was manufactured by the original Hall's Safe & Lock Company.

2. Old Hall safe manufactured by the original Hall's Safe & Lock Co.

Photograph three is a close-up of the dial and handle. Although a few came with L-handles, the overwhelming majority of Hall's safes came with T-handles. Notice the name on the dial.



3. Close-up of the dial and handle.

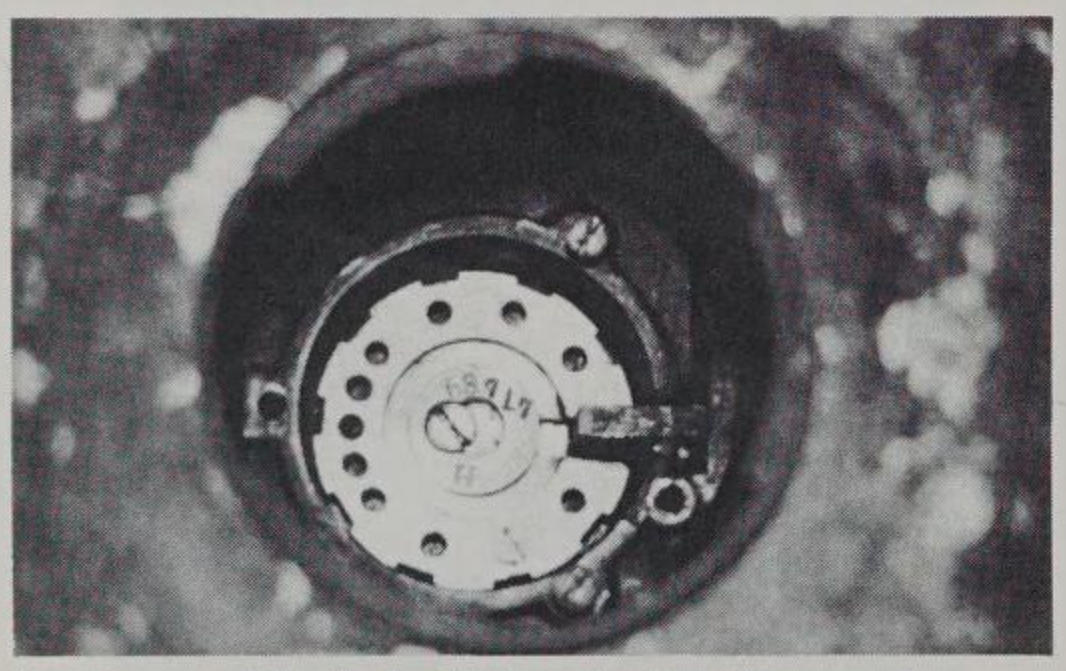
The procedure I used to open this safe works on fire safes manufactured by Hall's Safe & Lock, and the Hall's Safe Co., with T or L handles. (For the record, I should point out that the Halls did manufacture one model fire safe that does not even use a handle. The dial is in the middle of the door, is used to retract bolts, similar to Victor and Chicago, and the lock is not the traditional Halls type straight tailpiece lock.)

Twirling the dial while putting a little turning pressure on the handle caused the dial to bind severely, leaving no doubt in my mind that the traditional Halls lock was on the inside.

The actual operation of the lock is really quite simple. When the combination is properly dialed, the wheel gates are all lined up at 9 o'clock. In this position the tailpiece can enter the gates when the handle is turned, and retract the bolts.

Though there are various effective methods of opening the safes, I used my favorite. I drilled just above the dial ring, down at a sharp angle into the lock. The gates were lined up, transferred to drop-in and the safe was open.

In photograph four we have a close-up of the lock with the wheel pack removed. The tailpiece is engaged in the driver gate,



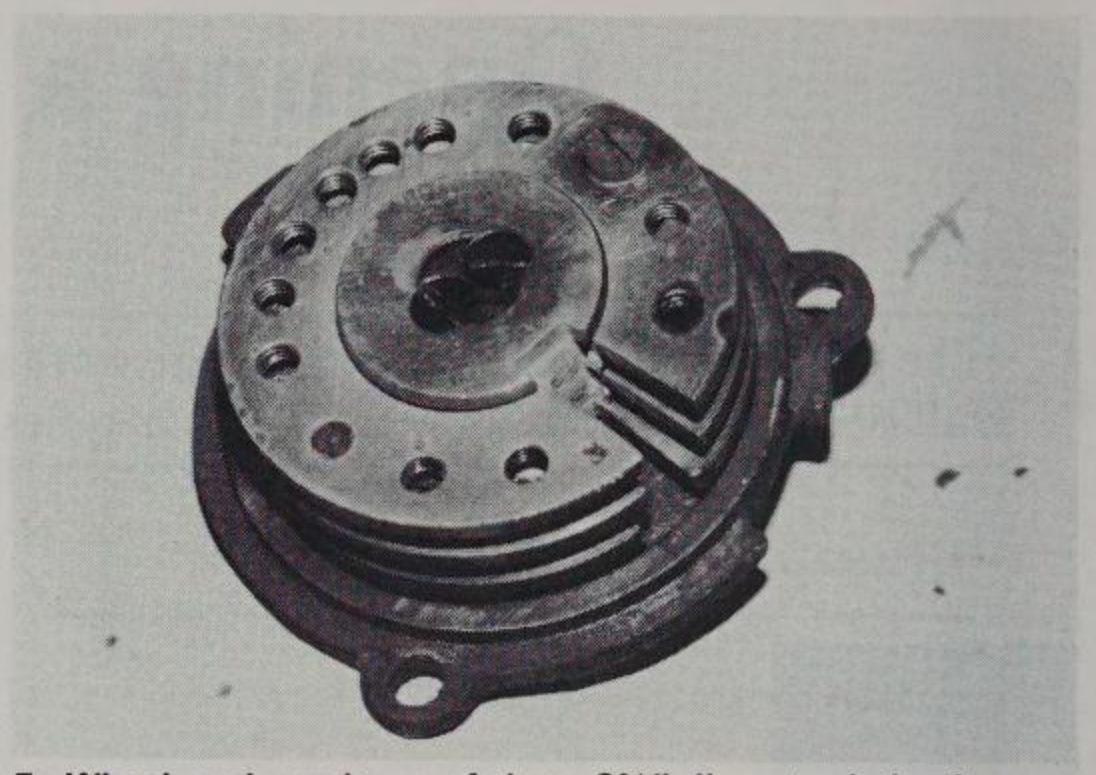
4. Close-up of the lock with the wheel pack removed.

and the bolts are in the retracted position. Notice the false gates all the way around the driver. These were intended to give the lock a little manipulation resistance. To the serious student of manipulation, however, these false gates are not a real problem.

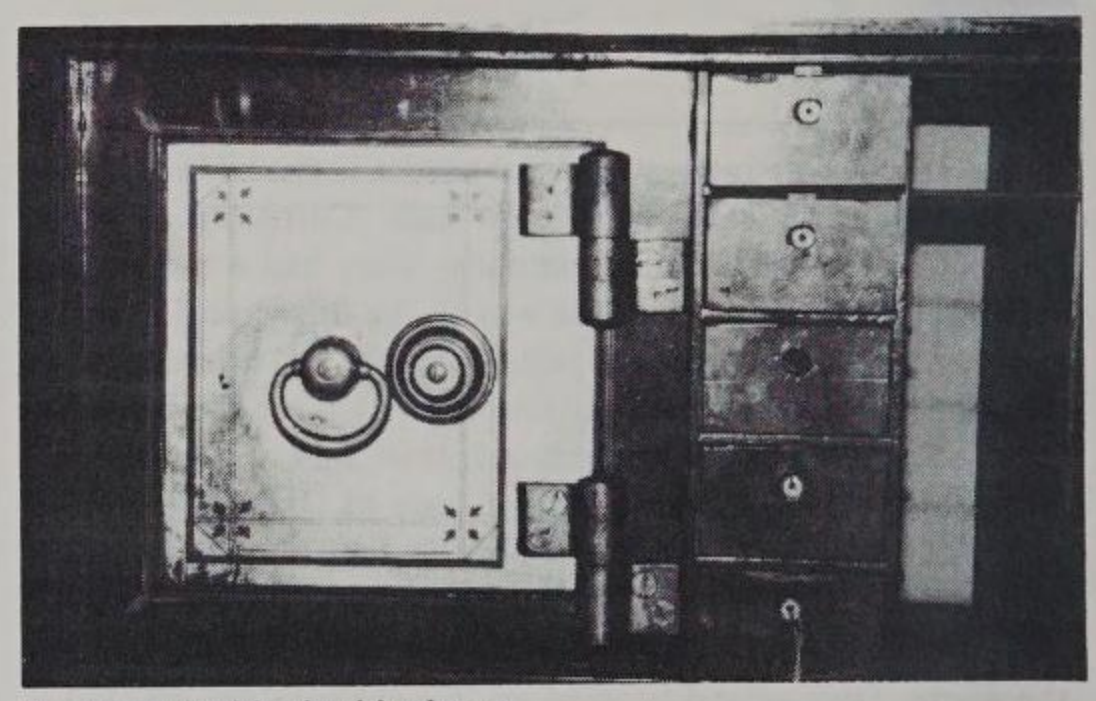
The difficulty (at least for me) comes while trying to get indications on the wheels. Even with a long pointer attached to the handle, I can only claim one success on a Hall, but if you feel you have the knack, by all means go for it.

One more thing about photograph four. Just to the right of the lockcase, the end of the external relocker can be seen. This is held in check by the back cover.

In photograph five we have a close-up of the wheel pack, which is made up of three, 2⅜" diameter, hole-change wheels.



5. Wheel pack made up of three 2⅜" diameter hole-change wheels.



6. Chest inside double doors.

Well, that completes that opening, but we are not finished yet.

Swinging the double doors open (one at a time), I was confronted with the chest shown in photograph six. This was an unexpected bonus for the new owner, who, even after hearing my price, gave the go-ahead.

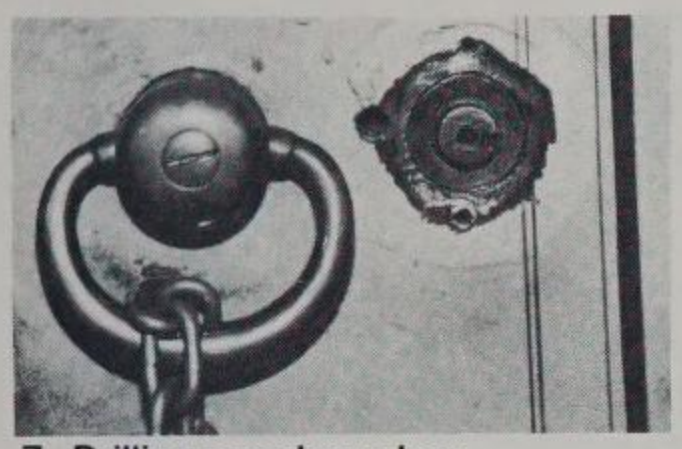
Over the years, Halls used several completely different locks in their chests. For identification purposes the first thing I do is twirl the dial and turn the handle. You can tell in an instant if it is a straight tailpiece type of lock, because it will bind just like the lock on the outer door did. And sure enough, it did, once again leaving no doubt in my mind that a straight tailpiece (also called X-type, or direct-entry) lock was on the inside.

First, I backed out the screw from the center of the dial and removed both the dial and ring. The drill point was marked, double checked, and drilling commenced. With the aid of a 5/16" Strongarm bit, a near perfect hole was drilled. I prefer to drill right at the top of the tailpiece that enters the wheels. This gives you plenty of room to work, and no transferring is necessary.

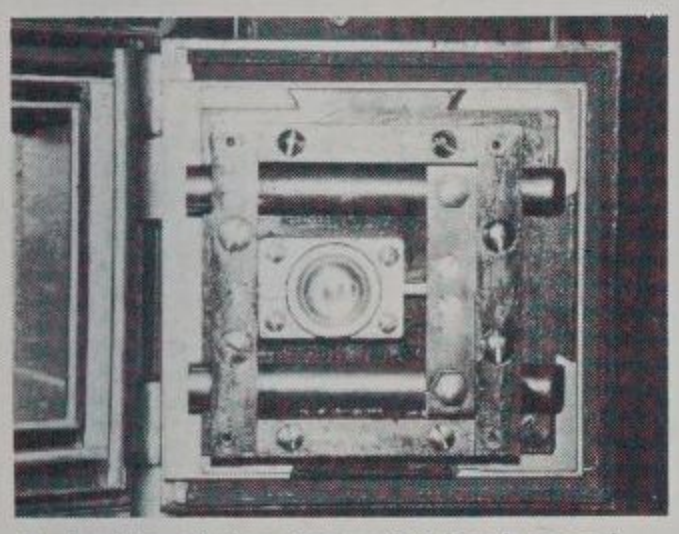
In photograph seven we have a close-up of the area in which I drilled. The hole is visible, and you can see the chain from my drill rig hanging from the handle.

Photograph eight shows us the inside of the door with the back panel removed. The bolts are in the extended position. Notice the tailpiece just to the right of the lockcase.

In photograph nine the combination was properly dialed, lining up all the gates with the tailpiece; the handle was thrown, which impelled the tailpiece into the gates and the bolts were retracted. There is no relocker.

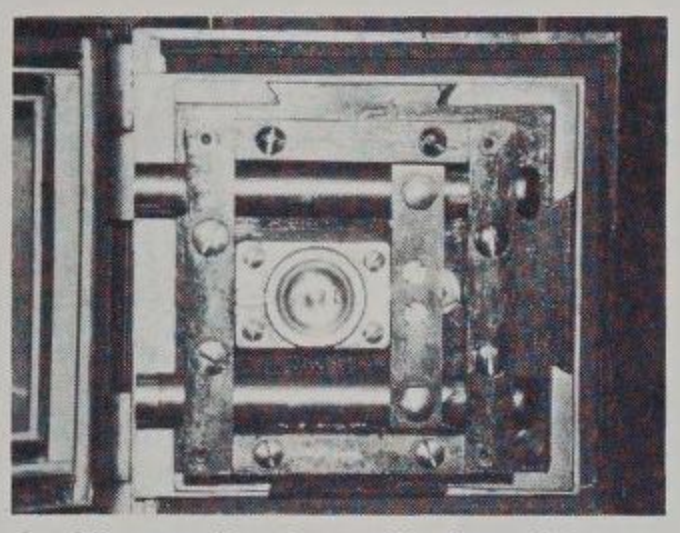


7. Drilling area shown here.

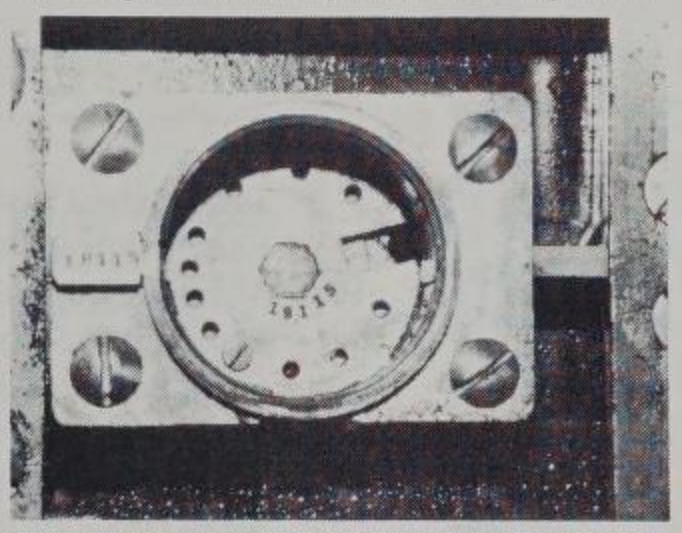


8. Inside of the door with back panel removed.

Photograph 10 is a close-up of the lock with the wheel pack removed. I have turned the driver a little to expose where the hole broke through the lockcase. As you can see, it was right at the very top of the tailpiece. To drill anywhere else would unnecessarily complicate the opening. Trying to come up with a set of numbers to transfer is difficult. The lockcase has no open cavities in which to drill, leaving only about 1/16″ clearance between the edge of the wheels and the body of the lockcase. Also, the driver is a little larger than the wheels. These two factors combined have convinced me that the best approach is the direct one—drill at, or very close to the drop-in position.



9. All gates lined up with the tailpiece.



10. Close-up of the lock with the wheel pack removed.

11. Wheel pack with four 1⅞″ diameter screw-change wheels.

Photograph 11 is a close-up of the wheel pack, which has four 1⅞″ diameter screw-change wheels. This wheel pack, like many of Halls chest locks, threads into the lockcase and is held in place by the little spring-loaded bar that snaps into a groove on the back cover. ■

The advantage of top-drilling a Hall's fire safe is that you miss the hardplate and a service sticker can be placed over the repair area. But hey, the hardplate isn't very hard. I now prefer to drill in at an angle from just outside the dial ring at 77. From here, you can lay a scope on top of the tailpiece and peek at the wheels through the crack in the lockcase. It works like a million bucks and requires no transferring.

Diebold Fire Safes

"For many years Diebold manufactured fires safes under their own name and also under the names York and Herring-Hall-Marvin. Here are proper identification techniques."

by Dave McOmie

How many safe manufacturers can you think of that made or make fire safes with the handle mounted below the dial? A half dozen spring readily to mind: Diebold, National, Protectall, RemRand, Reliable, and Gardall. The general position of the handle in relation to the dial is just about the only characteristic any of them have in common. The locks, mounting patterns, and relockers vary widely from manufacturer to manufacturer. This month we are going to discuss the one you are likely to see most often — the Diebold.

For many years Diebold manufactured fire safes not only under their own name, but also under the names York and Herring-Hall-Marvin. Diebold actually owned the rights to the names York and HHM for many years until selling them to Meilink several years ago. As we will discover in this article, proper identification is made not from a nameplate, but by the physical characteristics of the safe.

Photograph one shows a York fire safe that I was called upon to open recently. I recognized it immediately as a Diebold-made safe. The only important difference is that York products traditionally come with S&G locks, rather than Diebold locks. The easy and fairly reliable way to tell is to inspect the dial.

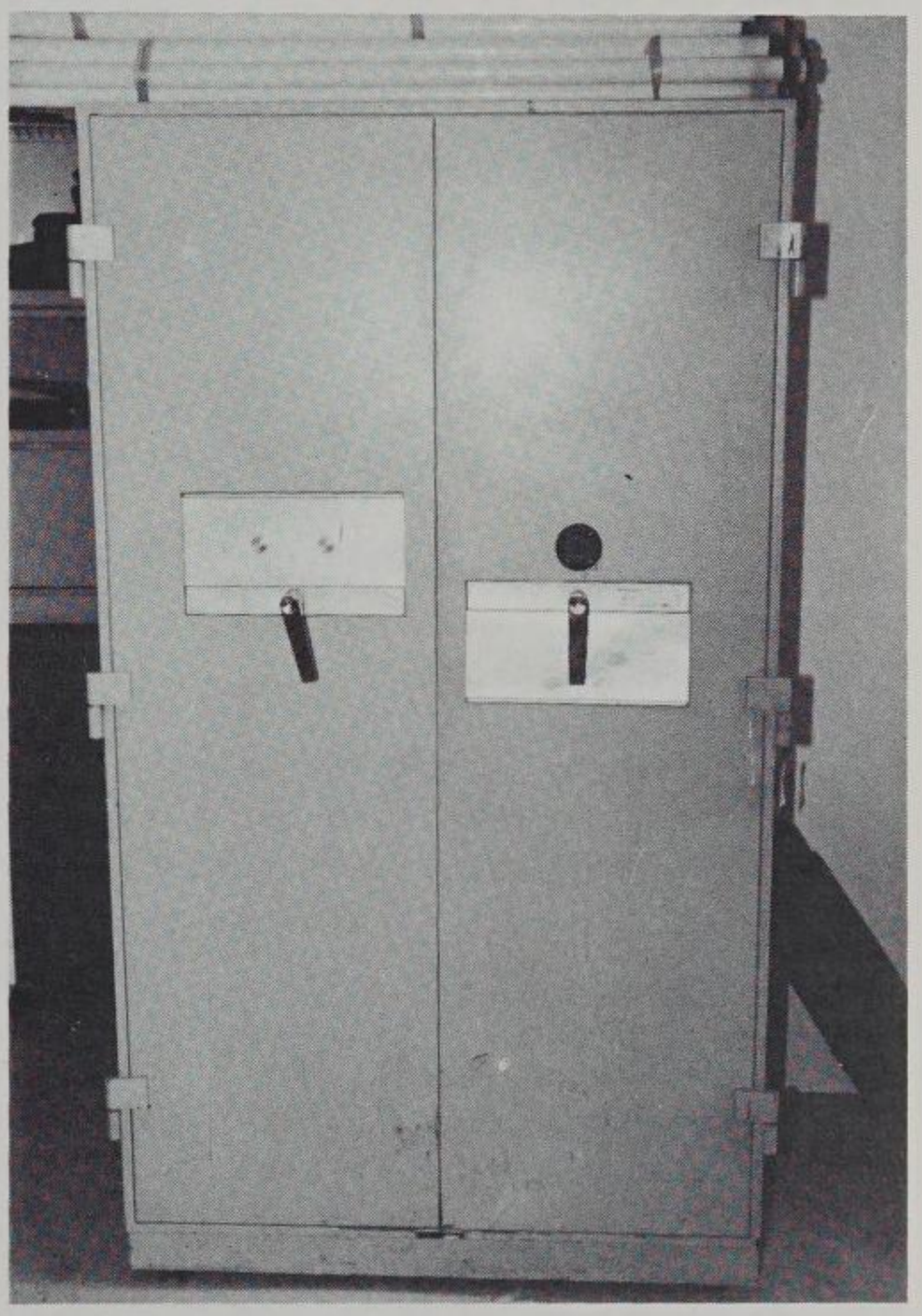
The locksmith who called me had already pulled the S&G dial, swung the escutcheon plate down and out of the way, attached his rig and drilled a hole into the lock. In this photo a drill fixture/template is still attached to the safe.

I looked into the hole and saw a bent fence, but could not see the wheels. The spindle would turn three full revolutions and stop. I figured that a carbide bit had been used to penetrate the lockcase. This often leaves one heck of a burr inside the lock, that can not only freeze wheel #1, but can also prevent the fence from dropping in. A quick question directed to my locksmith friend confirmed that a carbide bit had indeed been used.

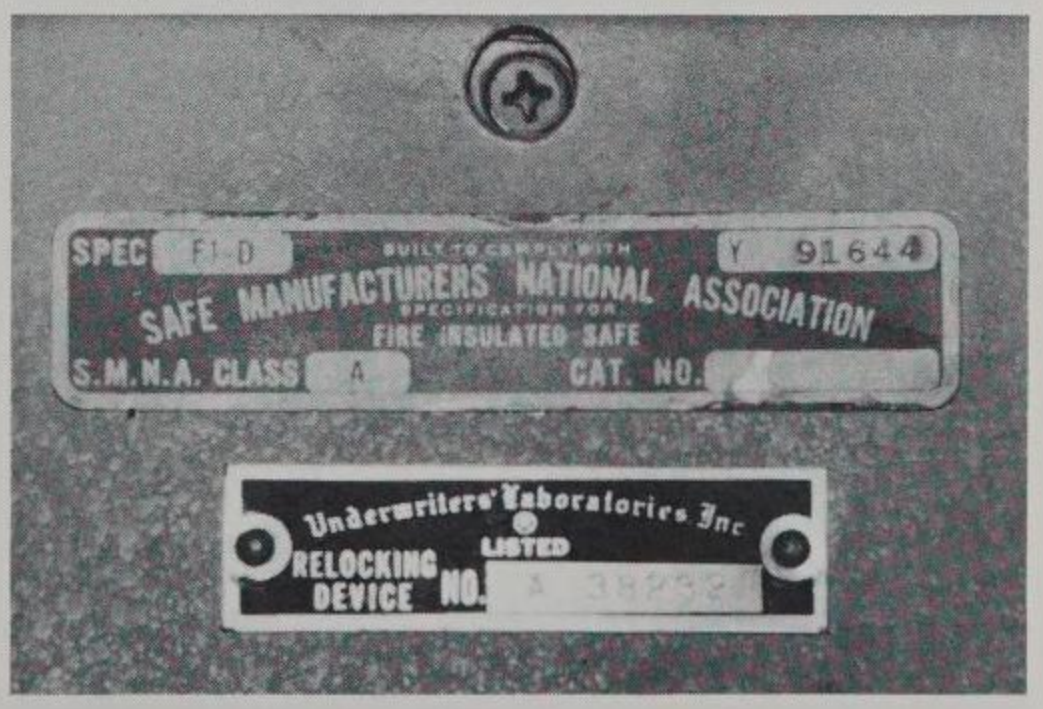
I had two real options: 1) try to drill the fence off. 2) enlarge the hole to remove the burr, and line the wheel gates up under the fence.

I wasn't wild about the first option because the hole was not exactly on the fence. Maybe the dial ring mounting holes were not perfect, but the hole was off just enough that the bit had "tweeked" the fence a little. So I enlarged the hole through the hardplate with a carbide bit and carefully penetrated the lockcase with a high-speed bit. This removed the burr; the gates were lined up under the crooked fence and the safe was open.

Photograph two shows the obsolete S.M.N.A. label designating this a Class A fire resistive safe, and also the U.L. relocking device label. At the top of this photo is an innocent looking phillips-head screw.



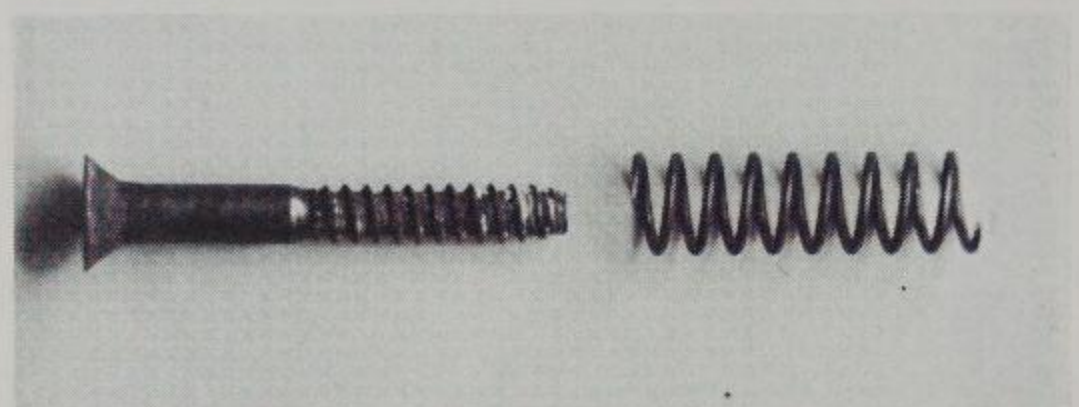
1. Diebold-made, York fire safe.



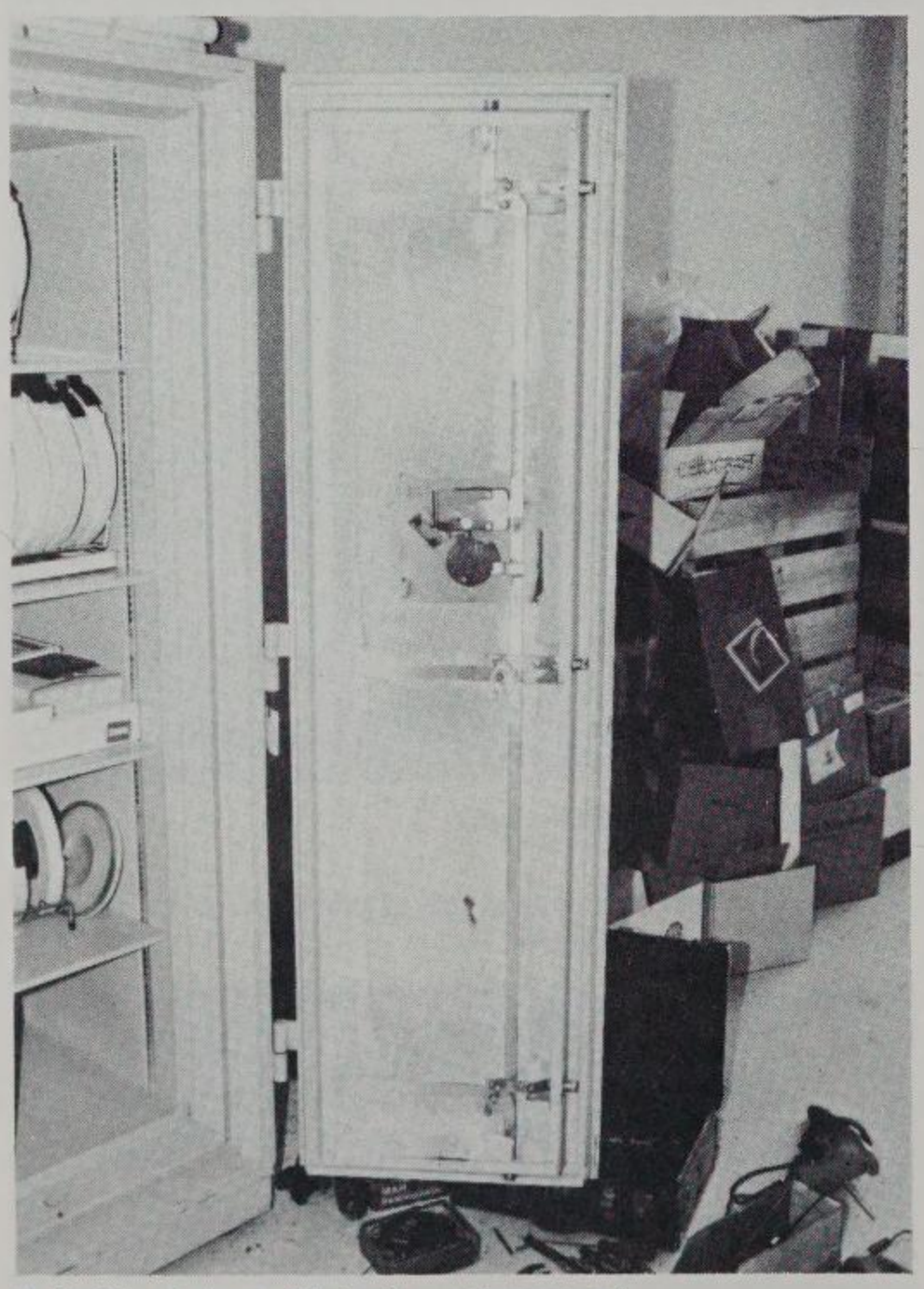
2. Obsolete S.M.N.A. label, U.L. relocking device label and a phillips-head screw.

Almost all 4-hour (350°) fire resistive safes and vault doors have a lot of screws attaching the back panel to the door. In the age of electric screwdrivers this wouldn't be so bad, but in between the back panel and the door, around every screw, is a spring. No matter how careful you are when you remove the panel, a bunch of springs are going to go every which way.

Photograph three is a close-up of one of the screws and its spring. Just remember, when you are re-installing the back panel, ignore the temptation to leave the springs out. They usually are not all that difficult to put back in, and do serve a rather important purpose. During a hot fire, the screws are designed to melt. When this happens, the springs will push the back panel tight against the jamb, creating another barrier against the heat.



3. Screw and spring found between the back panel and the door.

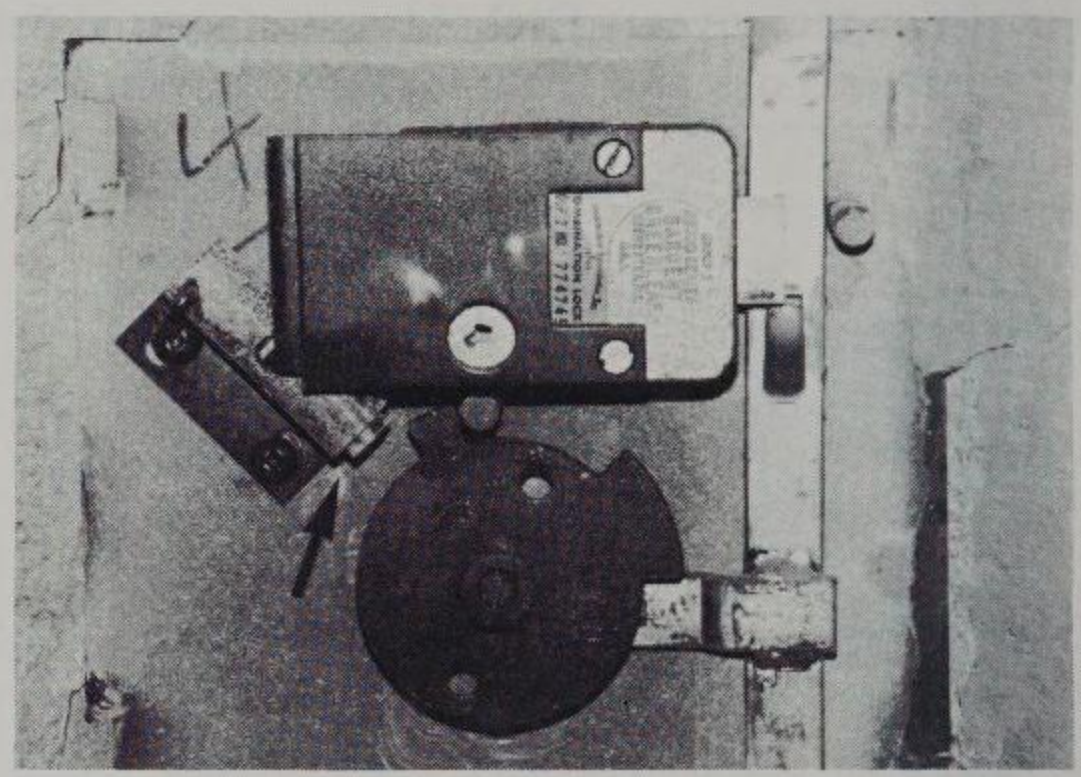


4. Inside of door with back panel removed.

Photograph four shows the inside of the door with the back panel removed. As you can see, this is a tall door. There are three side bolts, one top bolt, and a bottom bolt.

Photograph five is a close-up, showing the lock, relocker, handle cam, and part of the boltbar. The arrow is pointing to the external relocking device. Though there were a few minor modifications in these relockers over the years, the basic design and general location remained pretty much the same. (York's data safe and Diebold's Recordesk are the only exceptions I can think of. Both of these have the handles mounted to the left of the dial, and as such are easily distinguished from the others).

The lock is mounted RH. Observe the change key hole. The arrow shaped hole in the back cover is not pointing due east like it would on a #6730. It is pointing up in a north-easterly direction. This indicates we have an S&G #6770, what we call a

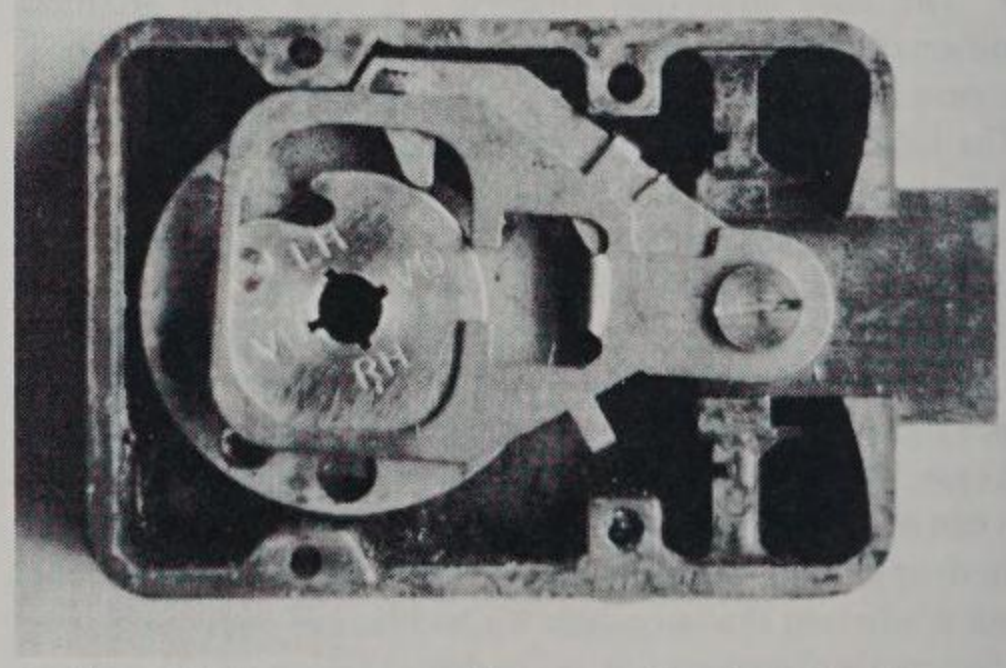


5. Shown is the lock, relocker, handle cover, and bolt bar. Arrow indicates external relocking device.

0 (zero) change lock. There is no change index. The combination is changed at the opening index. How so, you say?

Photograph six gives us the answer. Those of you familiar with the inside of a #6730 will notice the addition of a gate cover on the 6770. When a change key is inserted and turned, the wing on the key holds the gate cover up, which in turn prevents the fence from dropping in. This allows the combo to be changed without removing the lever.

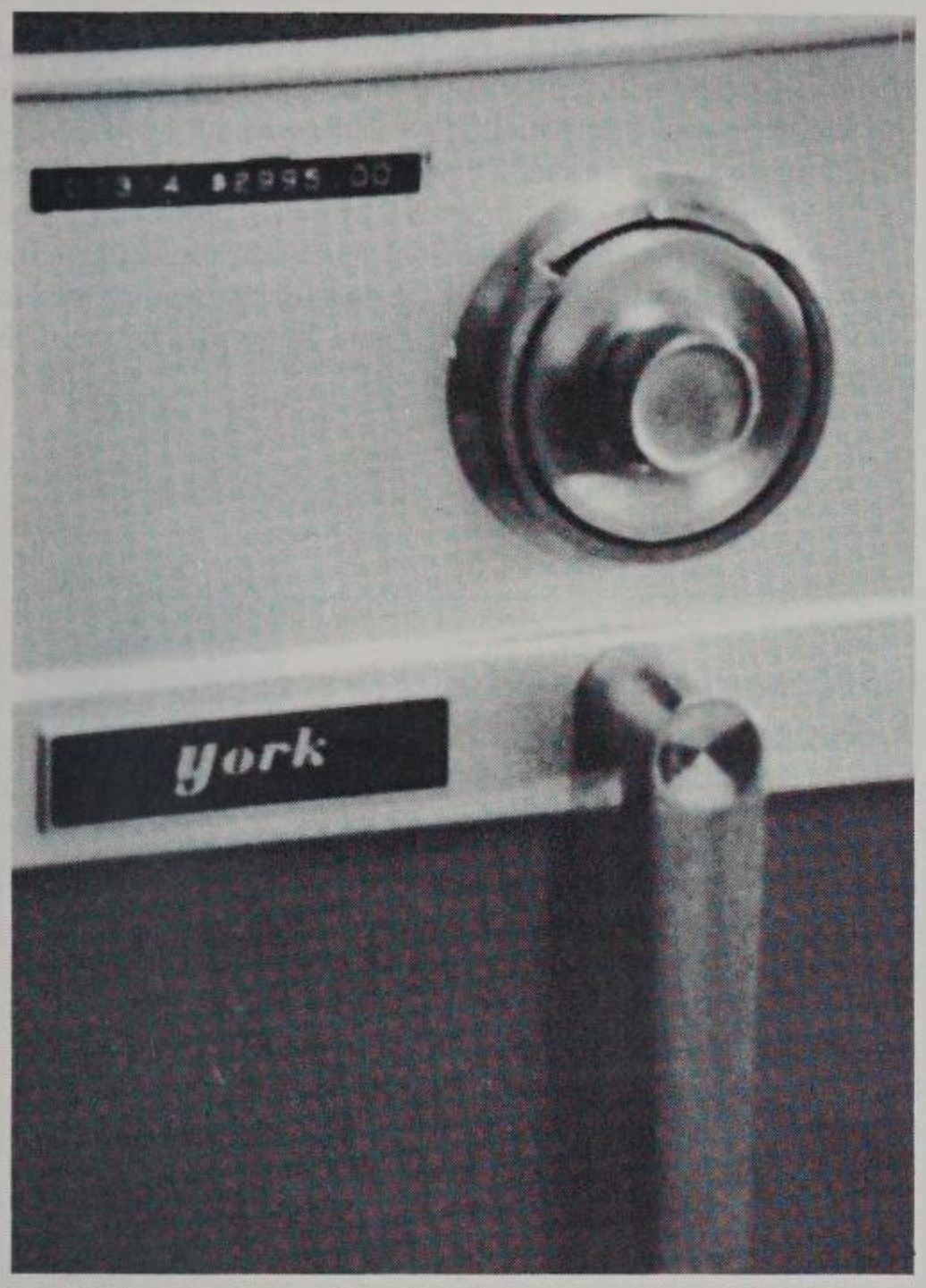
There is also a theoretical security problem with the 0-change lock. Let's say for the sake of example, that a business owner has unlocked his safe and leaves it open for the day. An unscrupulous employee with a change key and about 30 seconds of unsupervised time can change the combination to whatever he pleases—without ever knowing the old combination! All



6. The added gate cover allows combination changing at the opening index.

that remains is for the creep to come back after closing and relieve the safe of its contents. As I said , this is a theoretical drawback to a 0-change lock that a #6730 does not have. Enough said about that.

Most of you know by now that I am a real stickler for safe identification. We are now going to take a look at four different dial and handle set-ups. Even though they look completely different and carry the names of several different safe-makers, they were all manufactured by Diebold, and have nearly identi-

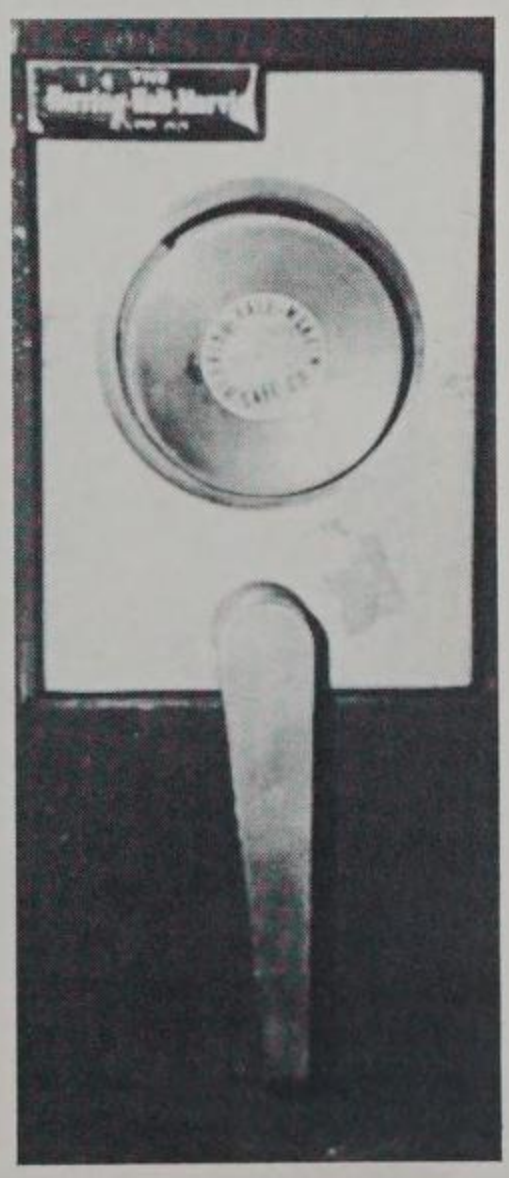


7. Dial handle from a York labeled safe made by Diebold.

cal internal configurations. The only real variable is the combination lock.

Photograph seven is a close-up of the dial and handle from a safe carrying a York label. It was manufactured by Diebold. The S&G dial tips us off that a #6770 is on the inside.

8. Old Diebold front reader dial and handle.

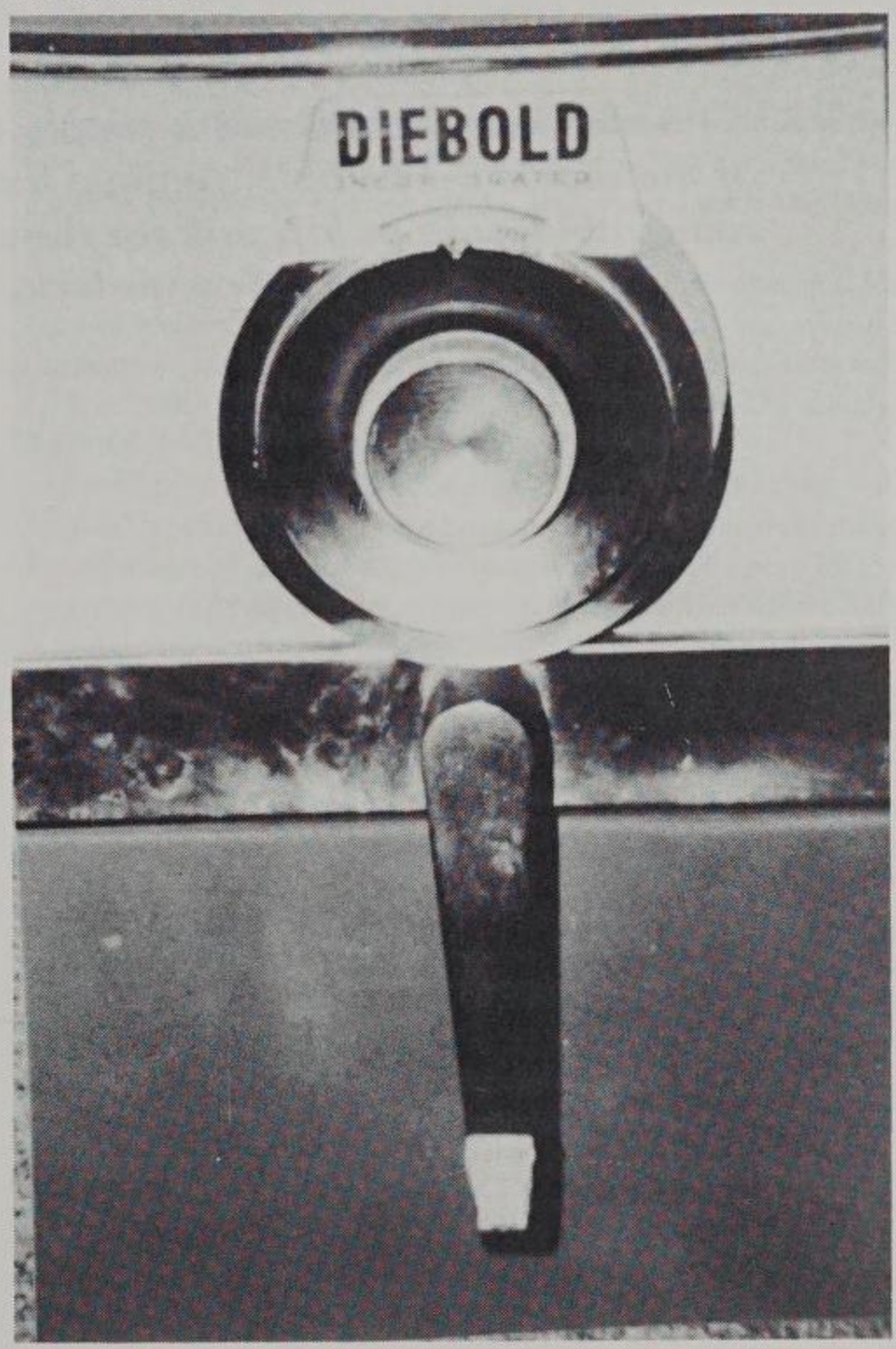


9. A handle and dial from a HHM labeled safe.

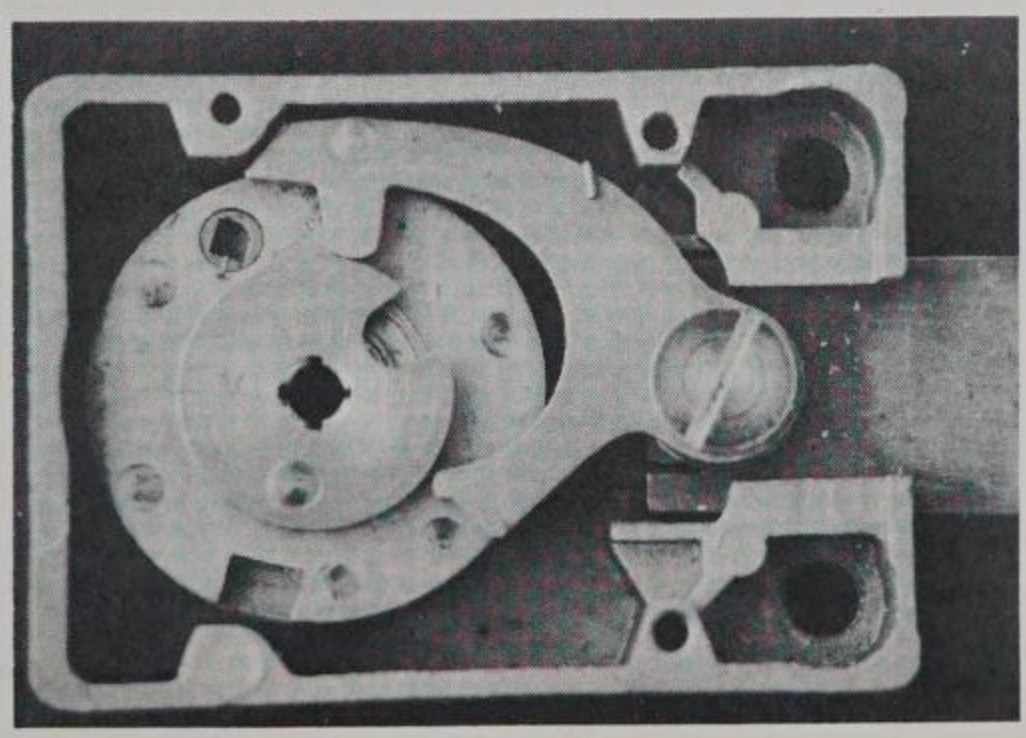
Photograph eight is a close-up of the dial and handle on an old Diebold. The dial is a front-reader, and the handle is black plastic with a round octagonal shape. This usually indicates the presence of a Diebold #900 series lock. This lock is very similar to the #177 series lock.

Photograph nine shows the dial and handle from a safe carrying an HHM label. It was manufactured by Diebold. A Diebold #177 series lock is on the inside.

Photograph 10 shows the dial and handle on a Diebold safe. These particular dials are really something. Spin one and watch the horizontal lines go whipping by; you will find out in a hurry whether or not you are easily hypnotized! A #177 series lock is on the inside.



10. A Diebold #177 lock under a dial and handle on a Diebold lock.



11. The Diebold #177 lock itelf.

Photograph 11 shows us a Diebold #177 series lock. In many respects it is quite similar to the S&G #6730. The small driver is behind the wheel pack; the 1¾" diameter wheels are mounted on a post inside the lockcase, and the drop-in area is very close to S&G's.

For the record, my unofficial estimate puts drop-in on a #6730 somewhere around 97-98, with the #177 dropping in at approximately 99.

One more thing, just to throw you a curve. On the safes we have discussed in this article, I used the dial to indicate which lock is on the inside. It works almost all the time. S&G dial (5/16 × 40 spindle threading), on a York says "I am a 6770." One of the various Diebold dials (¼ × 28 thread) on an HHM or Diebold says, "I am either a 900 or a 177, take your pick." But what about an S&G dial on an HHM or Diebold? Naturally, one would assume that an S&G lock had been retrofitted to the safe. This is a safe bet, but you trivia buffs might be interested to know that for a period of time, S&G did manufacture dials with a spindle threading of ¼ × 28. ■

I have since formulated a simple drilling philosophy for Diebold fire safes: If the dial is removable, remove it and drill through the door. If the dial is not removable, side or top drill for the change keyhole or side drill to punch in the lockbolt of the comb-lock. Simplicity makes life a lot easier.

MacNeal & Urban Jeweler's Chest

"This safe was built into the wall, so the wheels, top and sides are not visible. It was a cast iron fire safe with a jeweler's chest inside."

by Dave McOmie

Some jobs come in the most unexpected ways. The other night I was sitting around after dinner, browsing through my photo collection of safes and vaults, when the phone rang. It was my friend Bob Taylor, president of the National Antique Safe Association (NASA). Bob and I chat fairly often, both of us being diehard safe enthusiasts (or fanatics, if you talk to our wives), but this time he had a job for me. An associate NASA member up in my neck of the woods had a locked up MacNeale & Urban jewelers chest. I was asked if I would care to go open it.

In due course Bob put me in touch with the proud owners of the chest; a deal was struck, and away I went on a 230 mile drive up to Walla Walla, Washington.

Arriving at the jobsite, I was shown to the safe in photograph one. This is a MacNeale & Urban cast iron fire safe, with the jewelers chest to be opened inside. Before we tackle the chest though, let's take a quick look at the fire safe.

This safe was built into the wall, so the wheels, top and sides are not visible. Notice the ropelike border all the way around the edge of the safe. This was used by several manufacturers, such as Hall's, Tilton-McFarland, and MacNeale & Urban, and was popular during the civil war era.

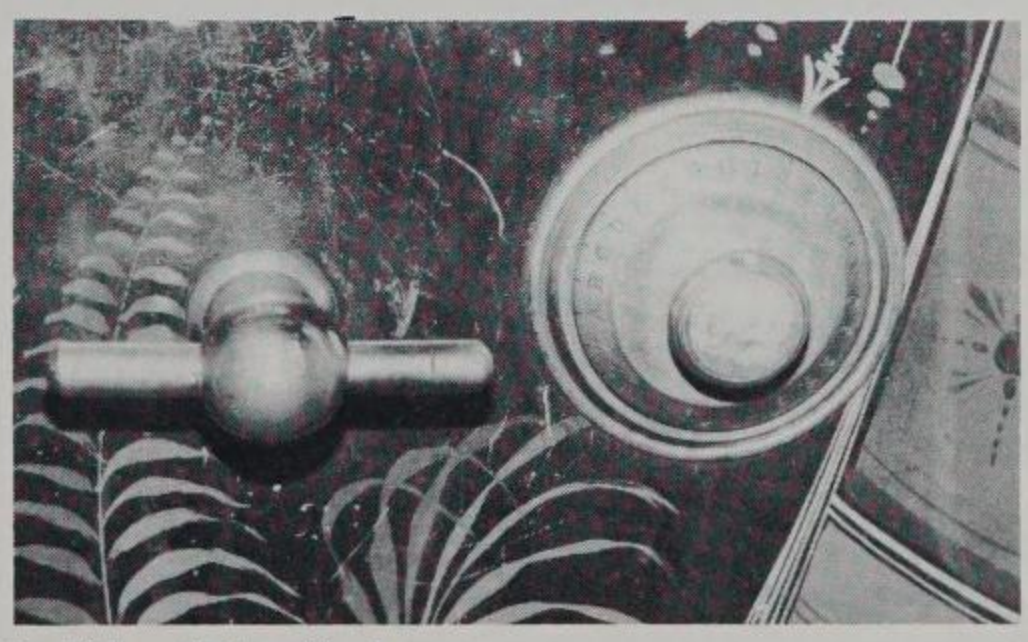
The name on the front undoubtedly represents the dealer who originally sold the safe. These guys must have sold a lot of safes. Every single M & U in my photo collection, still sporting the original paint, has either Raymond & Wilshire or Wilshire Safe & Scale emblazoned across the front door(s). It isn't uncommon to also find the original owners name either on the front top edge, or on the inner keylocking door(s).

Photograph two is a close-up of the dial and T-handle. Observe the letters on the dial. This was the MacNeale & Urban trademark, to use the 26 letters of the alphabet instead of numbers.

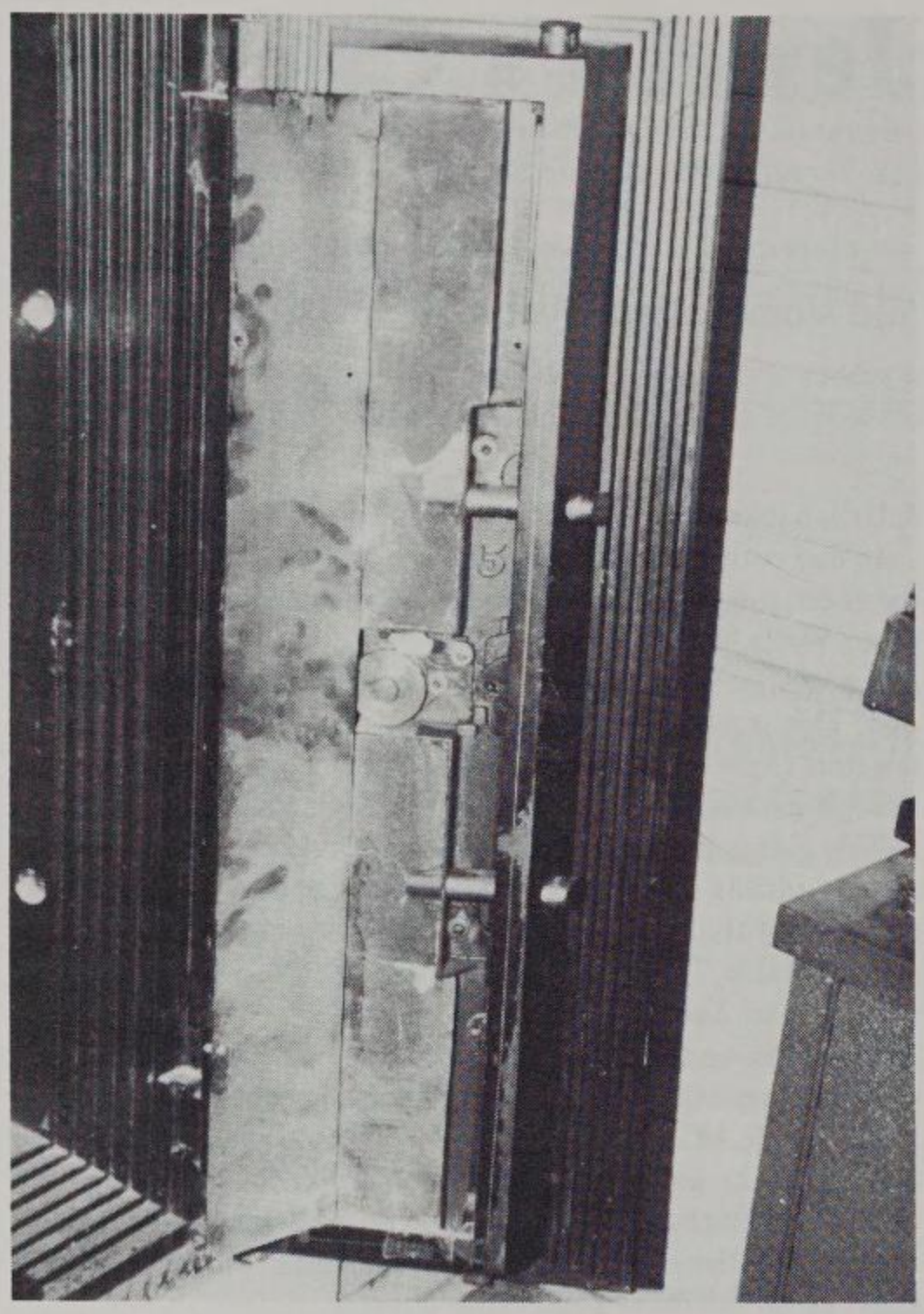
All M & U fire safes that I have seen use a four letter combination, with the fourth letter being fixed at K. Thus we have _ _ _ K. Quite often, these are set up on words; and while I am not a big fan of tryout combinations, it is worthwhile to spend a few minutes going through the tryout words listed in the HPC Safe and Vault Manual. The dial rotation is 4 turns Right; 3 turns Left; 2 turns Right; 1 turn Left to K; and Right to the stop position at approximately H.

Photograph three shows the inside of the door with the hinged back panel swung open. There are four fairly good sized

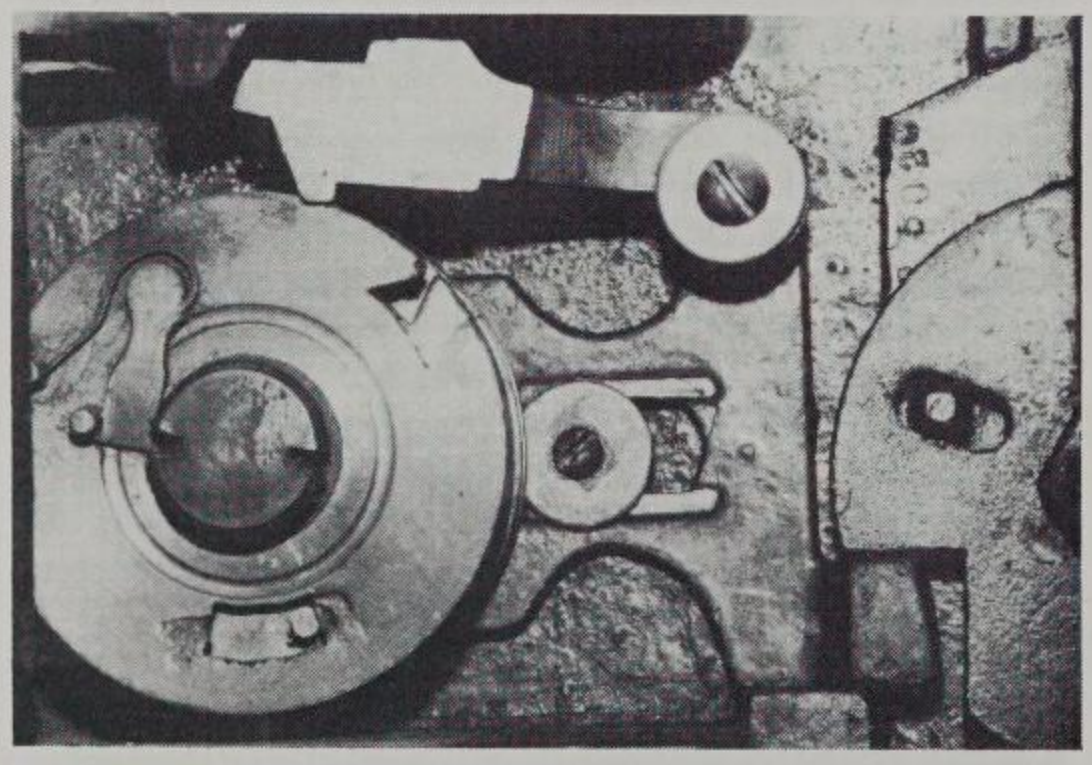
1. MacNeale & Urban cast iron fire safe.



2. Dial and T-handle close-up.



3. Inside of the safe door.



4. Close-up of the open-case lock.

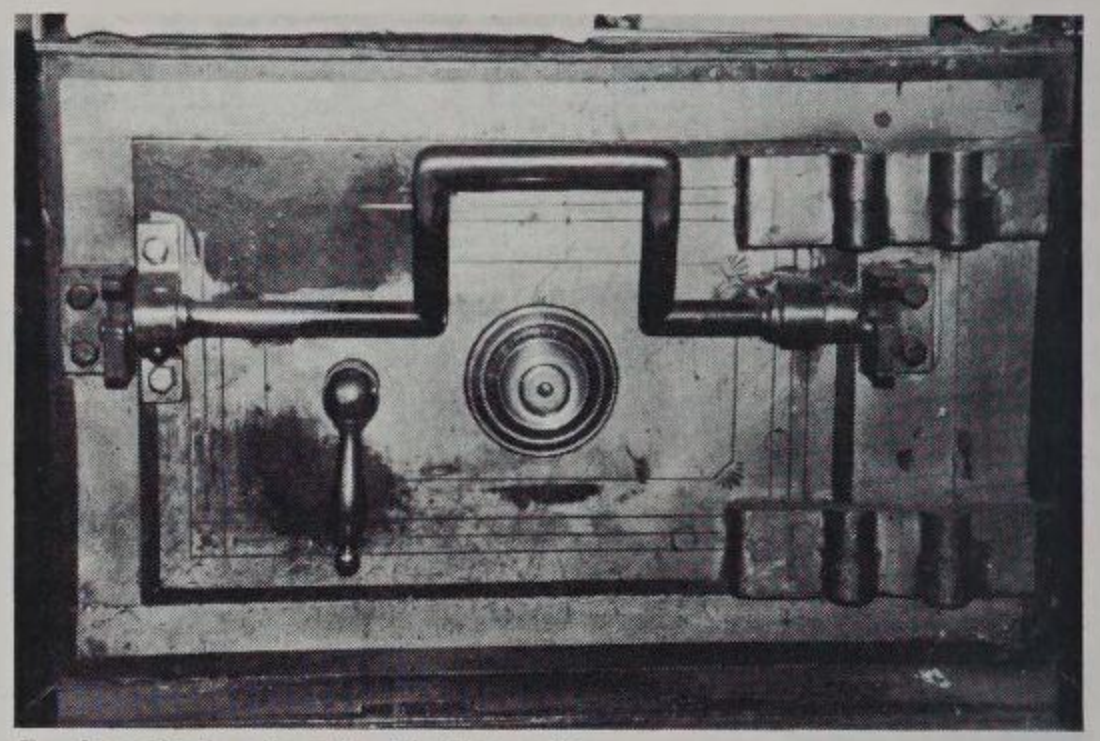
locking bolts—2 side, 1 top, and 1 bottom bolt.

Photograph four is a close-up of the open-case type lock. The wheels have a diameter of 2½", and the driver is rear mounted. This door, like most, is 3½" thick to the lock, though I have seen others as thick as 4". This is a helpful piece of information to have when you are angling in from outside the dial ring. The handle turns clockwise to open.

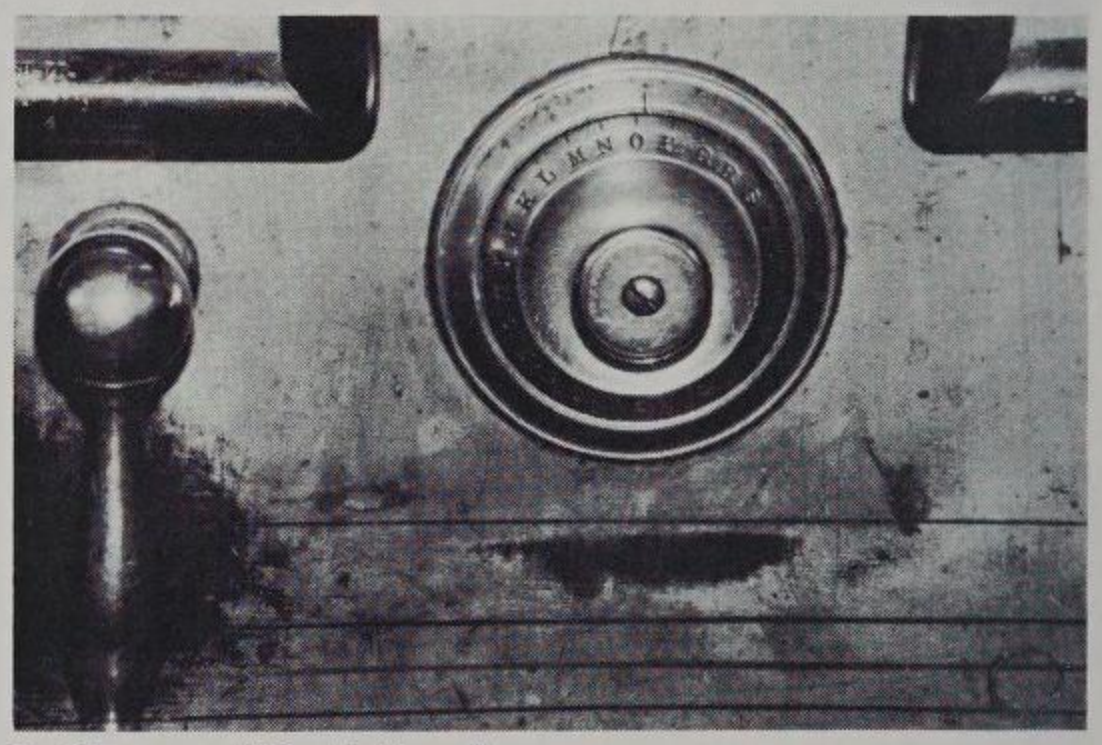
Now that we have spent half the article on the fire safe, it's high time we got to work. Let's do it.

Photograph five shows the jeweler's chest that I was hired to open.

Photograph six is a close-up of the dial and handle. The handle is teardrop shaped with a little ball on the end—it strikes me as a cross between a Mosler-Bahmann and a Herring-Farrel



5. Jeweler's chest inside the safe.



6. Close-up of the dial handle.

handle. The dial, once again, is lettered, but notice the screw in the center. They must have been thinking of me when they made these dials. After spending over an hour trying to manipulate the chest open, I grabbed my tool kit and prepared to drill. I backed out the screw and removed the dial and dial ring. Then I took a wheel out of the M & U chest lock that I brought, laid it up around the spindle and made a pencil mark around the edge of the wheel. I fired up my Hornet, set it on low-speed (1,500 RPM) and with a ¼" high speed bit, drilled through the first (soft) lamination.

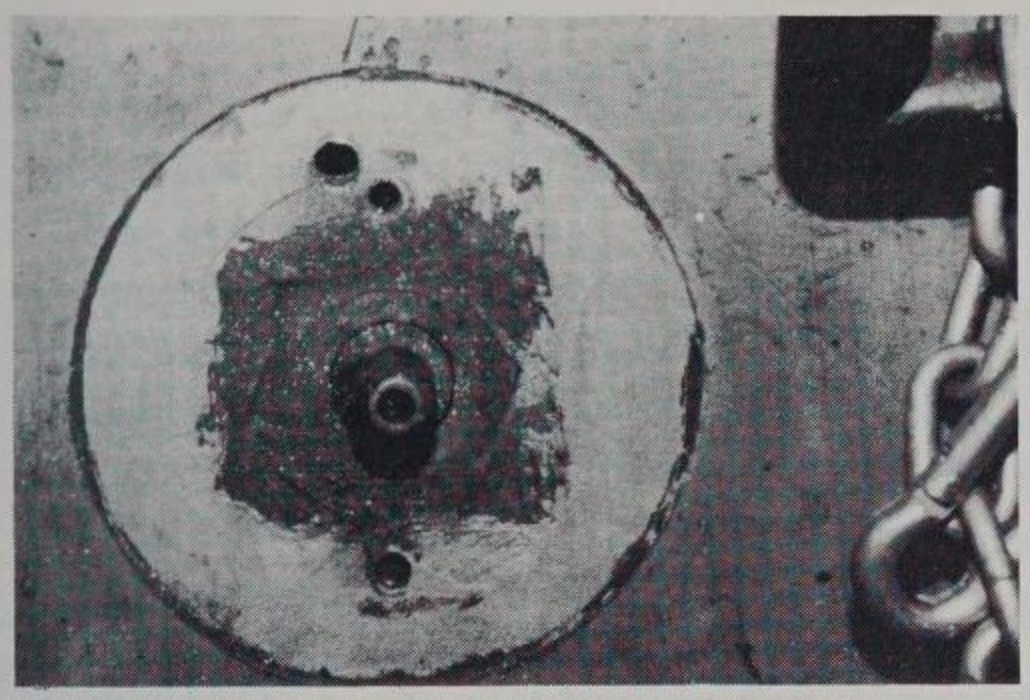
The second lamination was hard, so I slapped the Hornet into high gear (4,500 RPM) and chucked in a ¼" × 4" Strongarm bit that would see me clear down to the lockcase. Normal procedure is to use a carbide bit through the hard stuff, then switch back to a high-speed bit for the mild plates, and so on until you are through the door. But Strongarm bits are so sharp and cut so well, that they really have spoiled me. I know Bob Volosing doesn't recommend this, but I plowed right on through all the rest of the hard and soft laminations with a single Strongarm bit! When goldish colored shavings began coming out, I switched back to a high speed bit and finished the hole through the lockcase.

Photograph seven shows the hole I drilled just to the left and above the upper dial ring mounting hole. At the right is the chain from my drill rig hanging from the pressure bar.

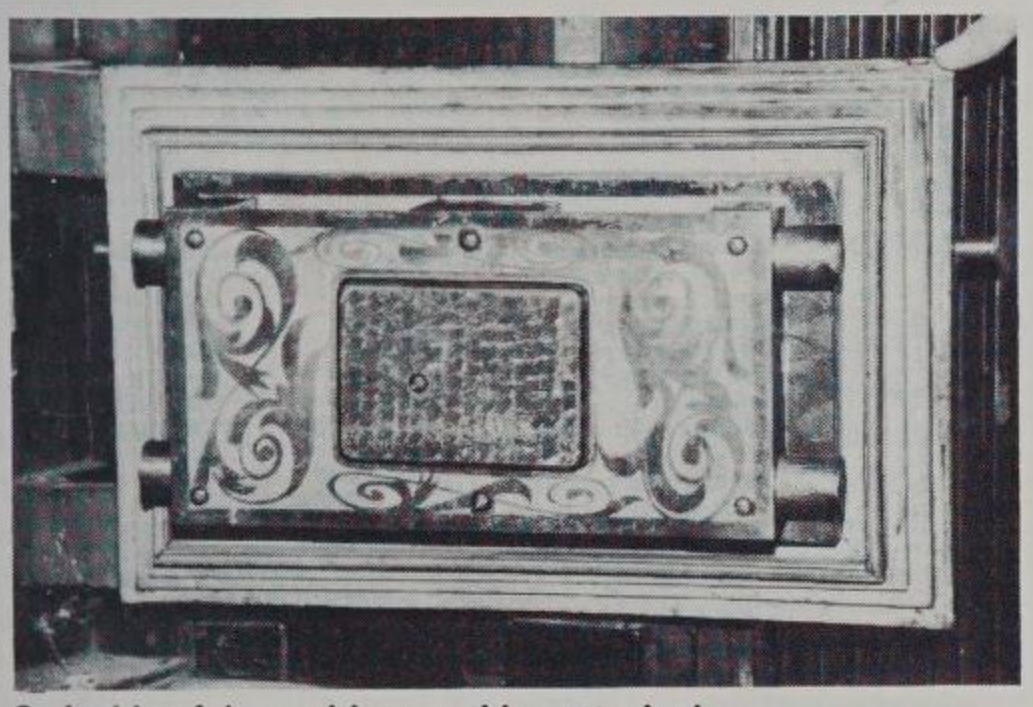
I lined up all the wheel gates, the fence dropped in, and presto, the chest was open.

Photograph eight shows the inside of the door with everything still attached. Notice the scrollwork on the back plate and back cover.

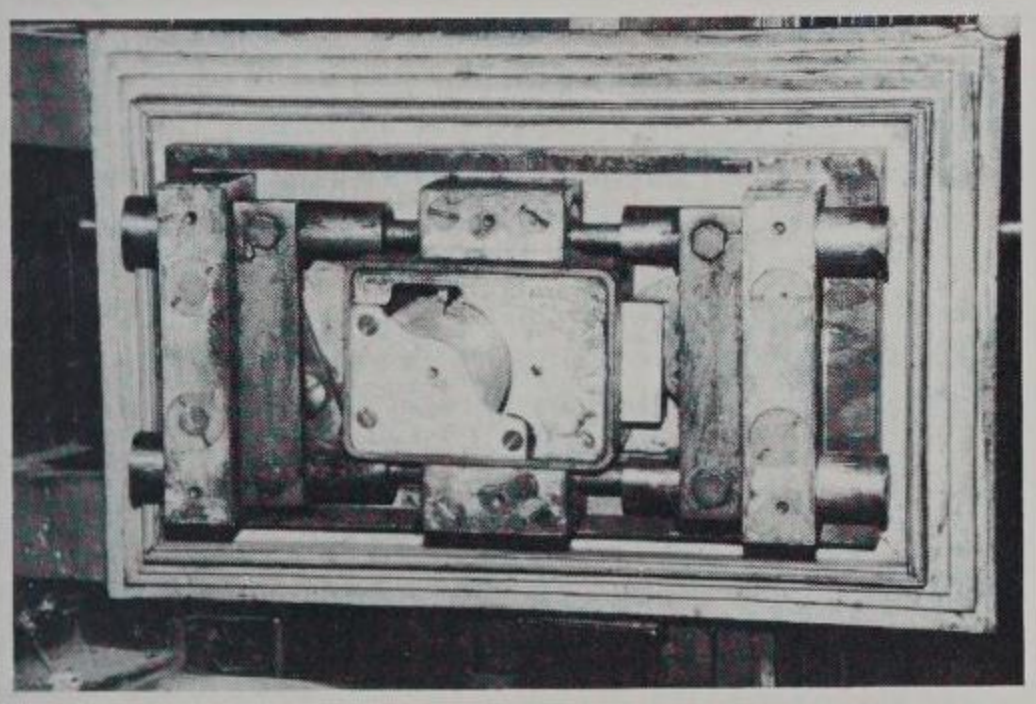
In photograph nine, the back plate and back cover have been removed, exposing the lock and boltwork.



7. The hole drilled above the dial ring mounting hole.



8. Inside of door with everything attached.

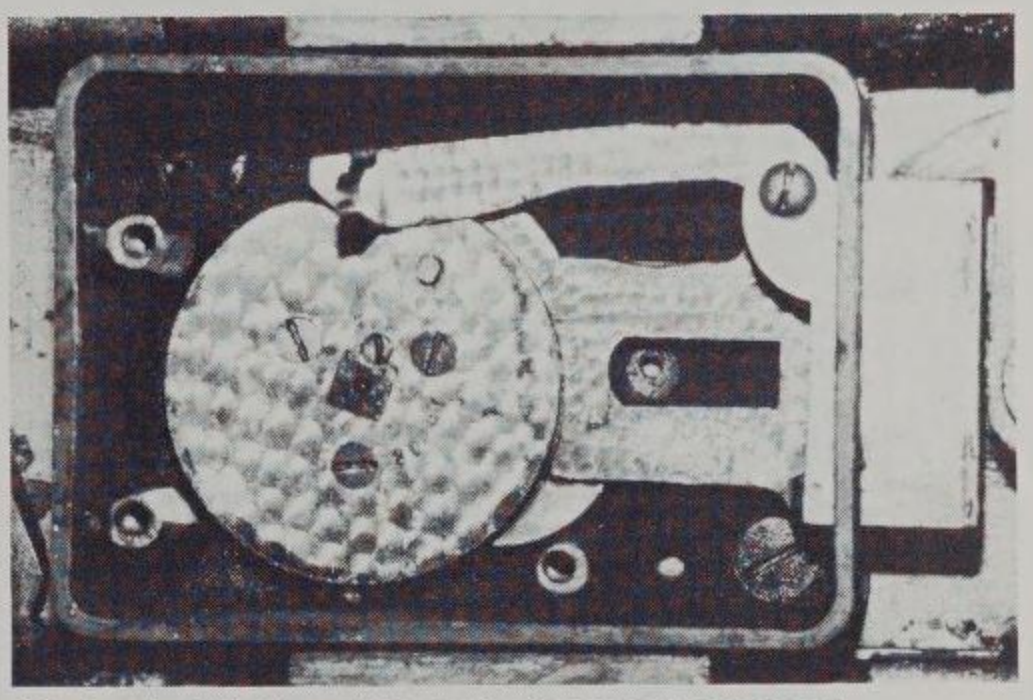


9. Exposed lock and boltwork.

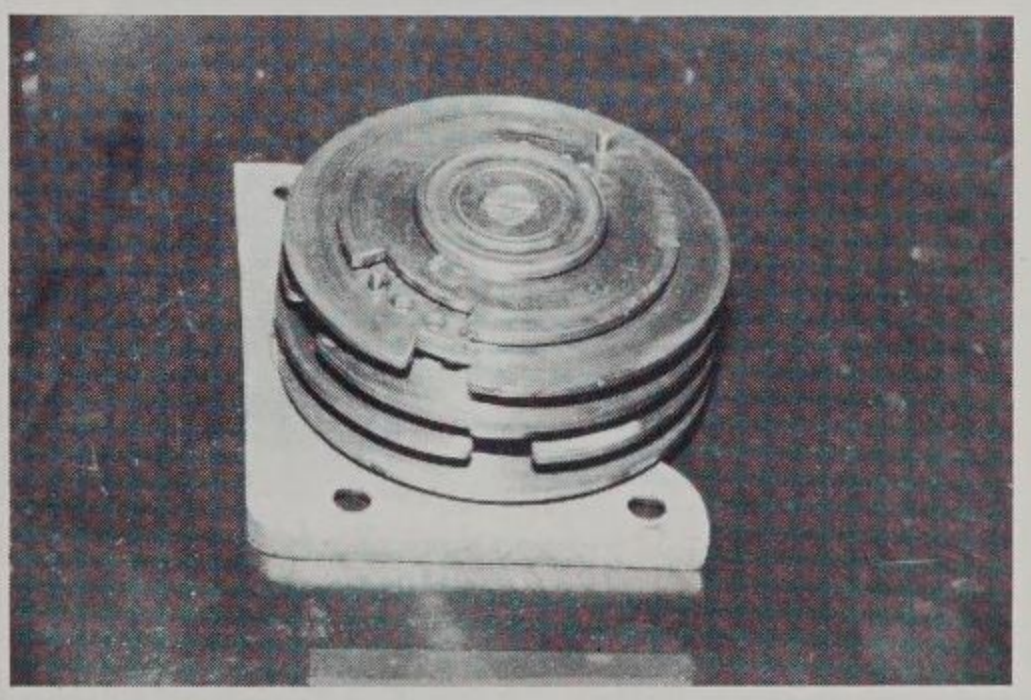
10. Close-up of the lock.

Photograph 10 is a close-up of the lock. These are beautiful locks that really need to be observed in person to be truly appreciated. The craftsmanship that safemakers and safe-lock makers displayed 100 years ago is something to be marveled at. They really did take pride in their work.

I have found M & U chest locks with three different sizes of lockcases, though they all use the same size (2½″) wheels. Some have three wheels, the majority have four wheels, and a few of the large case locks have five wheels, and a few of the large case locks have five wheels. (In the interest of full disclosure, I should note that M & U also made a very few chests with one of two indirect drive combination locks.) Notice the handle cam that butts up against the top of the lockbolt. More about this in a moment.



11. Lock with trim plates and wheel pack removed.



12. Wheel pack close-up.

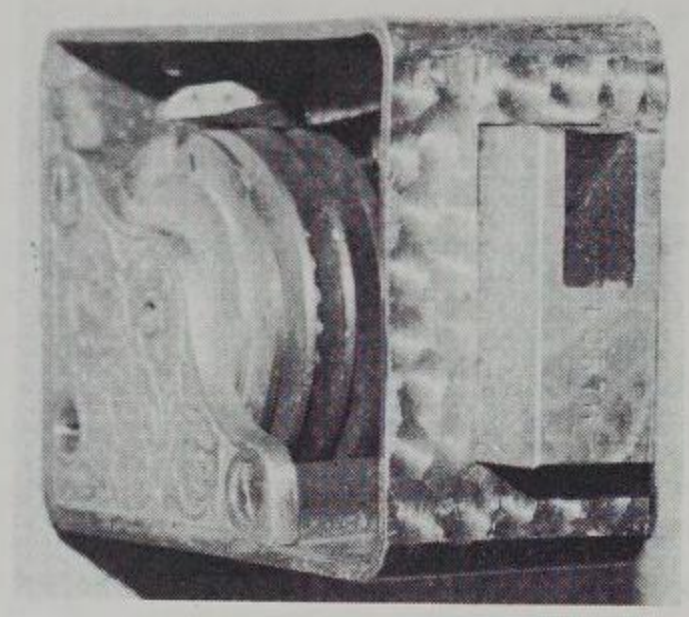
In photograph 11, the wheel pack and fancy trim plates have been removed. The front mounted driver and entire lever can be seen.

Photograph 12 is a close-up of the wheel pack, which comprises four 2½″ diameter wheels. One very nice feature about all M & U wheelpacks is that all the parts are numbered, in the order that they go on the wheelpost.

The dial rotation on a four wheel M & U chest lock is 5 turns Right; 4 turns Left; 3 turns Right; 2 turns Left; and 1 turn Right to the stop position, which was "Y" on this particular lock. Some stop at "S."

In photograph 13 we can see the cut-out in the end of the lockbolt which gives the handle cam clearance to throw.

I would strongly recommend giving manipulation a good hard try before drilling. I hate to put a hole in an antique safe if I can help it.



13. Shown is the cut out in the lockbolt which gives the handle cam clearance to throw.

Those of you who, like me, are antique safe lovers, should consider joining the National Antique Safe Association. There are several different kinds of memberships available: associate, professional, and field respresentatives. For more information contact: Robert Taylor, c/o N.A.S.A, P.O. Box 110099, Aurora, CO 80011. ■

There are many locks used in M&U cast iron fire safes, and it is hard to tell them apart from the outside of a locked safe. So I came up with a drill point that allows you to drill straight in on them all. Set the alphabet dial on "Z". Drill straight in (or up at a very slight angle) from just outside the dial ring between "Q" and "R". This will provided a good scope and transfer hole.

Opening Mosler's FS-4L

"My good friend called me on a Saturday morning. He was up against a vault door and needed some help. I slurped down my coffee and headed out to the job."

by Dave McOmie

I stand accused of picking on Mosler. A good friend of mine was browsing through recent copies of *The National Locksmith* magazine, and it appeared to him that Mosler had been in the spotlight a disproportionate number of times. So he started counting safes. It seems that over the last year or so, I have covered about three dozen safes in the magazine, and more than one dozen of these have been Mosler-made.

There you have it, the evidence is in, but there is no need for a jury. I will confess...I am guilty as charged. But there are extenuating circumstances, and with the court's permission I would like to present my side of the story.

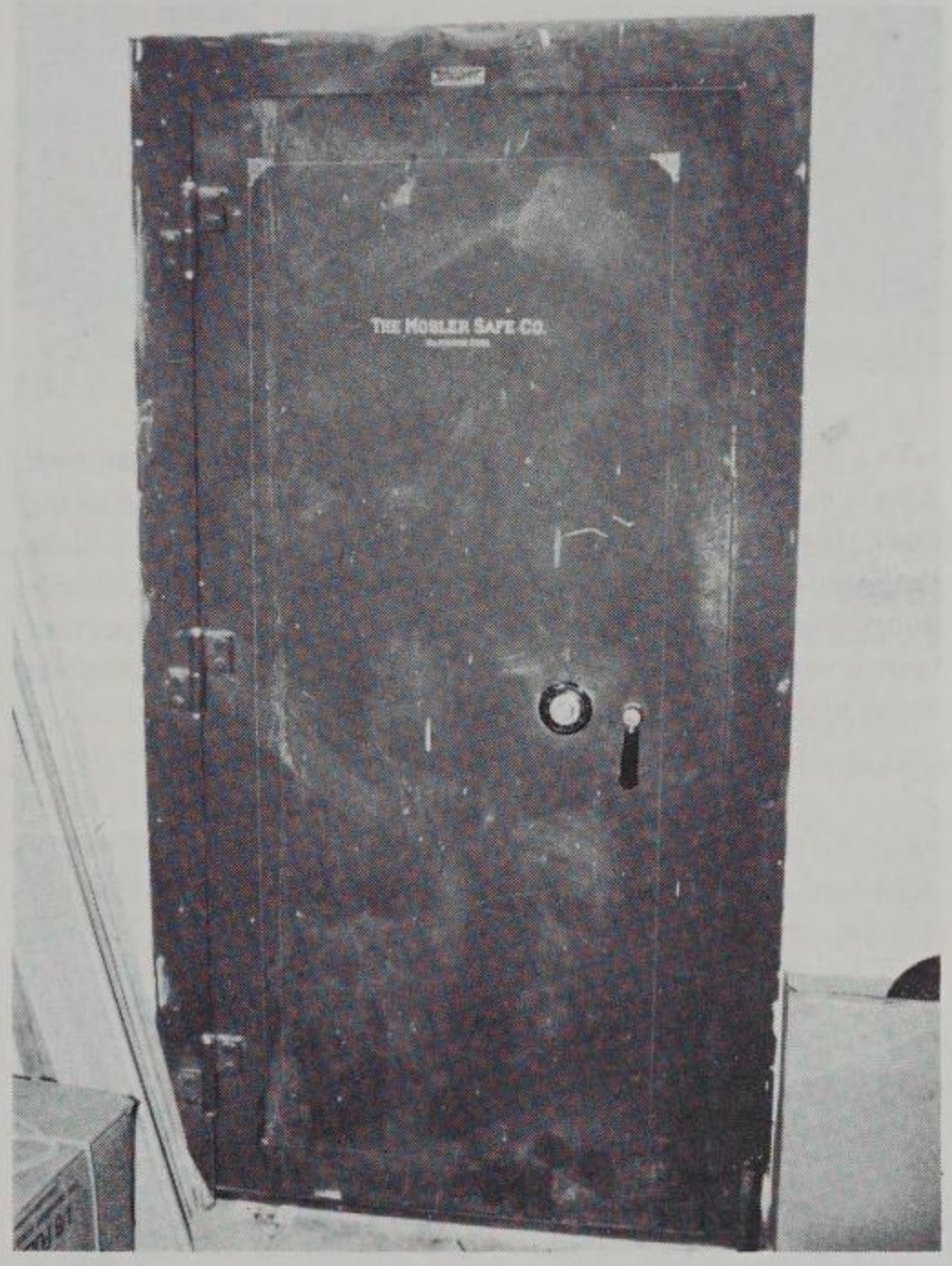
Yes, it's true, I have been picking on Mosler but for two very good reasons. First of all, Mosler has, without a doubt, manufactured more different models of safes and vaults over the last 100 years than any other American safe-maker. That alone is reason enough to devote a lot of time to their products, but there is still another reason. The fact is that getting information from Mosler is like obtaining blueprints to the Stealth Bomber—you can forget it. Mosler is to the safe and vault industry as Best is to the lock industry. Need I say more?

My job is to provide you with first-rate articles on safes and vaults. Hey...if I don't do that, I'm out of a job. One way to approach this is to cover containers and provide information not available elsewhere. And since Mosler has made so many safes, and provided us with zero information, I feel compelled to do articles on their products every so often. Enough said; am I acquitted?

This month we are going to look at a vault door that I opened recently. Who do you think it was manufactured by? You guessed it, Mosler!

My good friend Neal McMahon, of Emergency Locksmith Services, called on a Saturday morning. He was up against a vault door and needed some help. I slurped down two gulps of coffee and headed out to the job.

Neal escorted me to the vault door, and photograph one was snapped before I opened my tool kit. As you can see, it is a large fire-resistive door, Mosler's model FS-4L. Throughout the years Mosler has been very consistent with the basic design of their fire-resistive vault doors. The internal configuration, including the handing of the lock, and style and placement of the relocker has remained pretty much unchanged. The only important variable (at least to the safeman) is the lock used on the inside. Identify the lock and you are halfway home.



1. A Mosler, model FS-4L vault door.

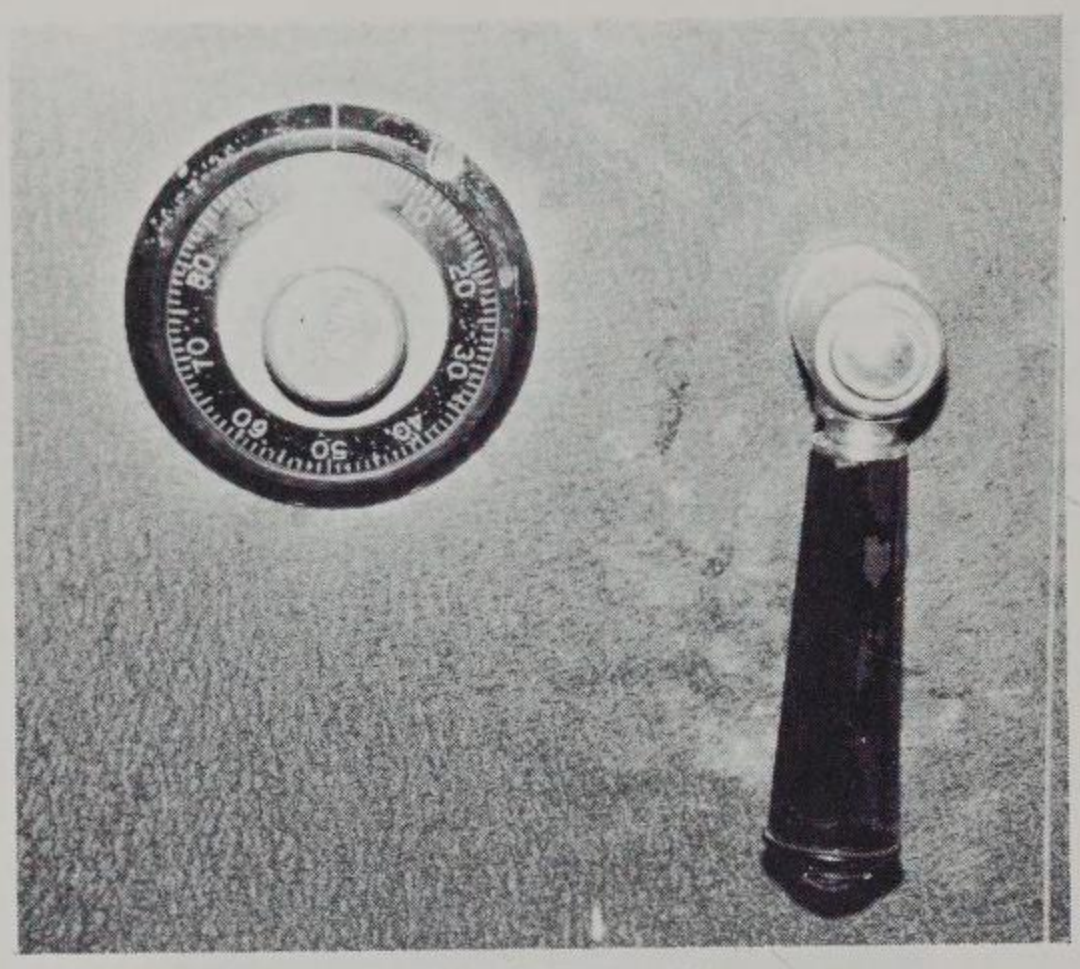
There are a lot of things I look for when trying to identify the lock on any Mosler container. I examine the color of the paint, the Mosler logo, any exposed U.L. and S.M.N.A. labels, the hinges, the corners, escutcheon plates, and most importantly the dial and handle. When applicable, I measure and record the distance from dial center to handle center. This is often the key to identifying many Mosler products.

On the vault door at hand, the color (kind of a sea-green), logo (1950s), and the dial and handle (old-style), convinced me that either a B-6 or a B101-107 series lock was on the inside.

The fact that it carried a 4-hour fire label narrowed it right down to the B-6. It has been my experience that the B101-107 series locks were used only on 1-hour vault doors. On these the handle and dial are much closer together anyway, which makes identification a snap.

Photograph two is a close-up of the dial and handle. The handle is black plastic with an octagonal shape to it. The dial is a black and white front reader. The hole through the dial ring was Neal's attempt to bypass my services. He knows that 10 is my favorite spot to penetrate a B-6, so he started a hole through the dial ring, began having second thoughts and called me.

My favorite place on a B-6 mounted RH is indeed at 10, whether it be for a direct sight-read or for a scope and read, but



2. Dial ring and handle. Hole drilled at 10.

take a good look at photograph one and figure out for yourself which way the lock is mounted. Aha! This is a left-hand swing door (the hinges are on the left), therefore the lock will be mounted LH. It is important to note the handing of all safe doors when deducing a drill point, and is especially important to do so on vault doors where the incidence of left hand doors is much higher.

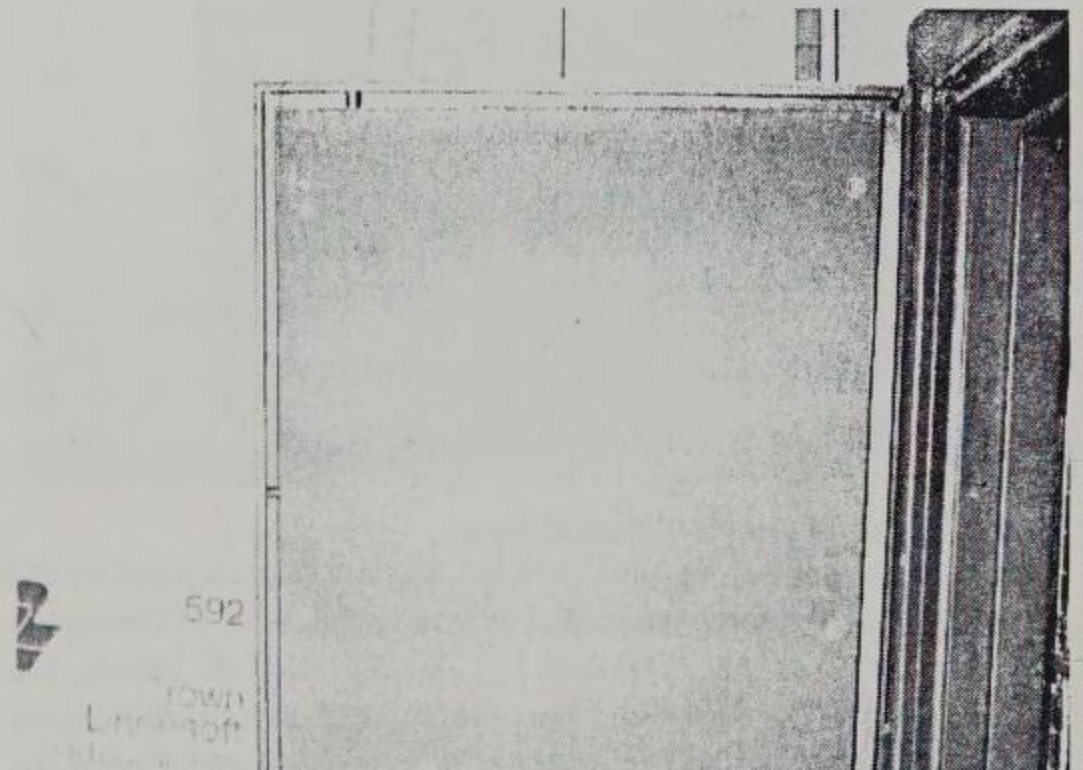
My goal when drilling a B-6 is to come in to the rear of the lockcase (the side opposite the lockbolt), missing the lockbolt slide assembly, and staying well away from the fence. This one being mounted LH (Mosler simply turns an RH lock upside-down), I drilled through the ring at 90 and angled slightly down toward the lockcase. As penetration crossed the three inch mark hardplate was encountered. I have to say that as far as fire-resistive safes and vault doors are concerned (pre-1980), Mosler has used thicker, higher quality hardplate than any other manufacturer I can think of. The composition is smooth (thank goodness), but it is pretty stout stuff.

I made it through with a 5/16″ Strongarm bit and a lot of pressure, easing off just before entering the lockcase. A high-speed bit was used to finish the hole, and I clicked on my straight light for inspection. It was absolutely perfect. I could see all the wheels and the front mounted driver. The gates were lined up, numbers recorded and transferred to drop-in. On the second try I felt the fence drop in on the last turn left, and the dial came to a stop at about 8. I grabbed the handle, turned it clockwise and the vault was open.

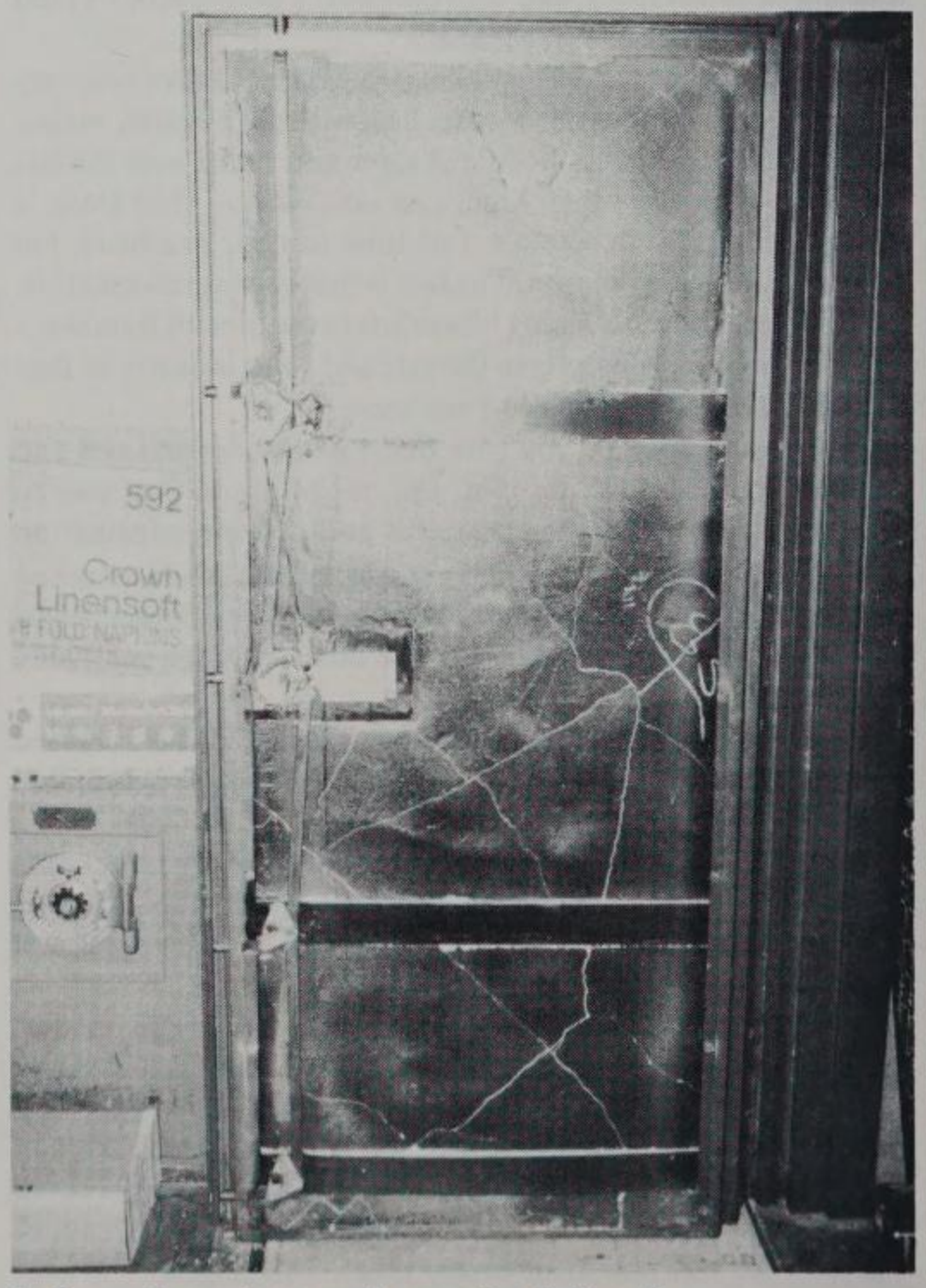
Total time on the job: about 25 minutes. Am I bragging? Well, allow me this moment of glory to discuss a near identical vault door that I drilled open less than a week after this one. We are talking 2 hours and 4 holes—more about this later.

Photograph three shows the inside of the door. Eight attaching screws and the emergency escape handle can be seen. Underneath it is the back plate covering the lock.

Mosler's escape device is one of the easier ones to operate. There are no buttons to push, no levers to pull, and no complicated instructions to follow. (Remember now, we are *not* talking GSA!) Simply throw the handle and you are out. When we removed the back plate of the door also visible in photograph



3. Inside of vault door featuring the emergency escape handle.



4. Second panel removed, exposing boltwork.

three, we were surprised to find another plate behind it. This one also has 8 attaching screws. That makes a grand total of 16 heavy duty screws to remove, and don't forget there is a large spring behind each and every one of them that needs to be re-installed.

With both panels removed, as in photograph four, the lock, relocking device, and boltwork are finally exposed. There are four side bolts and one top bolt.

In photograph five we have zoomed in on the lock and relocking device. This is a left hand door; the relocking device is mounted *above* the lock. On a right hand door it will usually be mounted *below* the lock. This device can be triggered in one of two ways: By a torch attack, which will melt the fusible link; or by a punch attack which will disconnect the linkage.

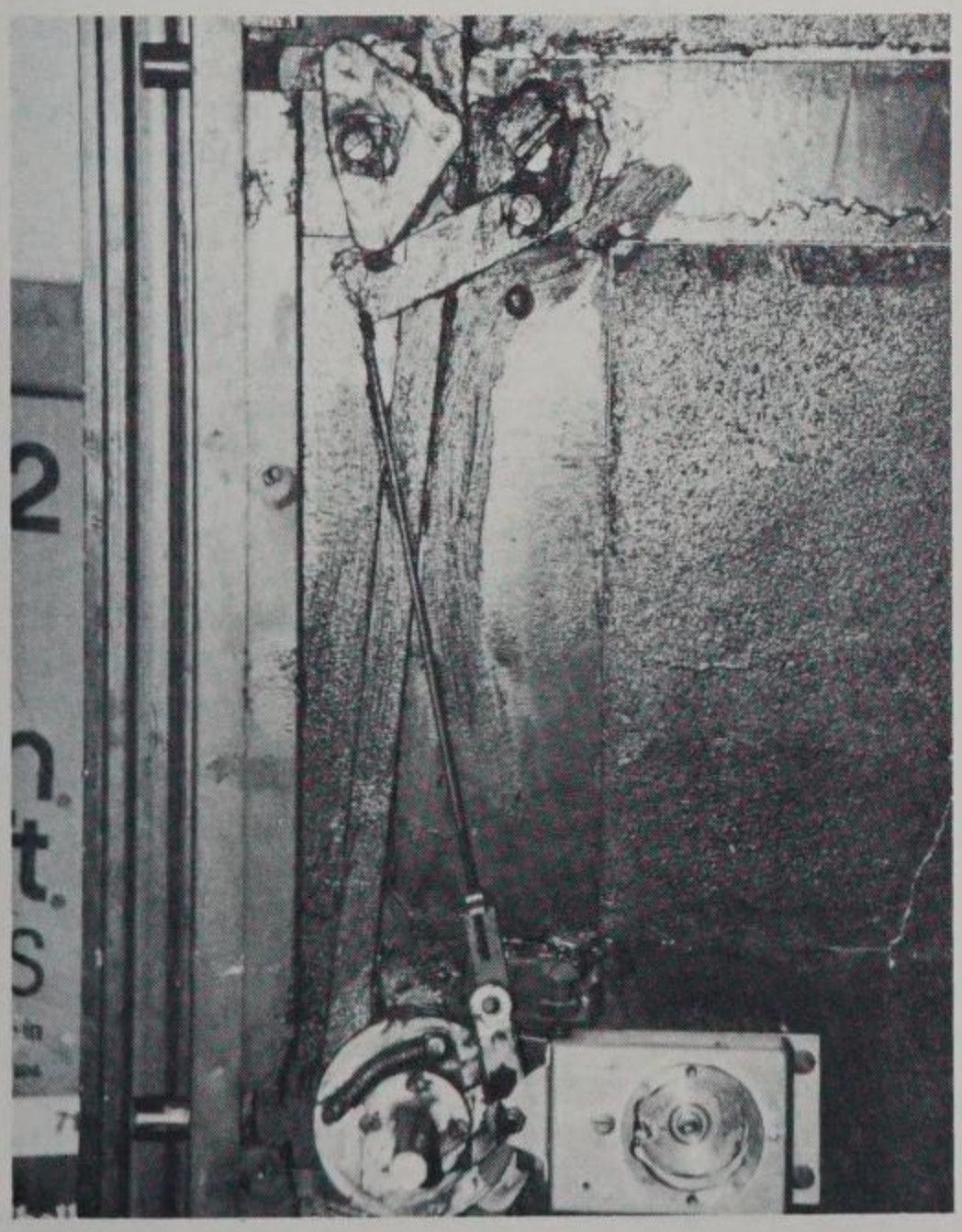
Also note the B-6 and the escape mechanism. This is an ingenious piece of equipment. It works, (for lack of a better phrase) like a slip-clutch. When the escape handle is turned, the inside piece disengages from the cam, rotates, and retracts the bolts.

The B-6 lock has a case size of 4″ × 3″. There are three curb mounted 1⅞″ diameter wheels, and the driver is in front. The drop-in position on a B-6 mounted LH is about 30, a RH lock drops in at about 80.

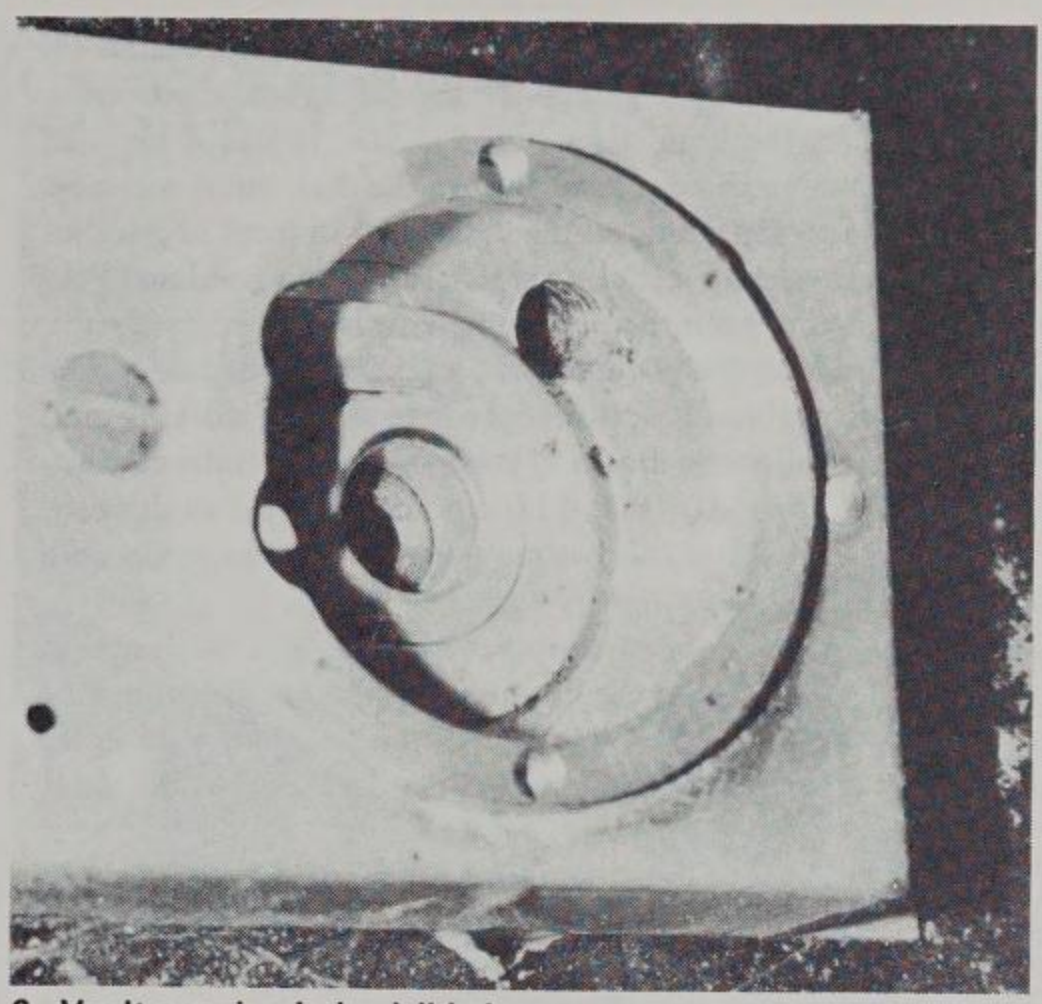
Photograph six was taken at an angle to allow the hole that opened the vault to be seen.

Photograph seven is a close-up of the uppermost side bolt, the idler crank (this is the pivoting piece), and the relocking device. This photo is pretty much self-explanatory. When the spring loaded relocker is triggered, it hooks the pin on the idler crank and prevents the bolts from being retracted.

The owner of this vault wanted it set up so it couldn't be locked again, so Neal and I took the you-know-what out and flipped a coin to see in whose collection it would belong. I lost,



5. Close-up of the lock and relocking device.



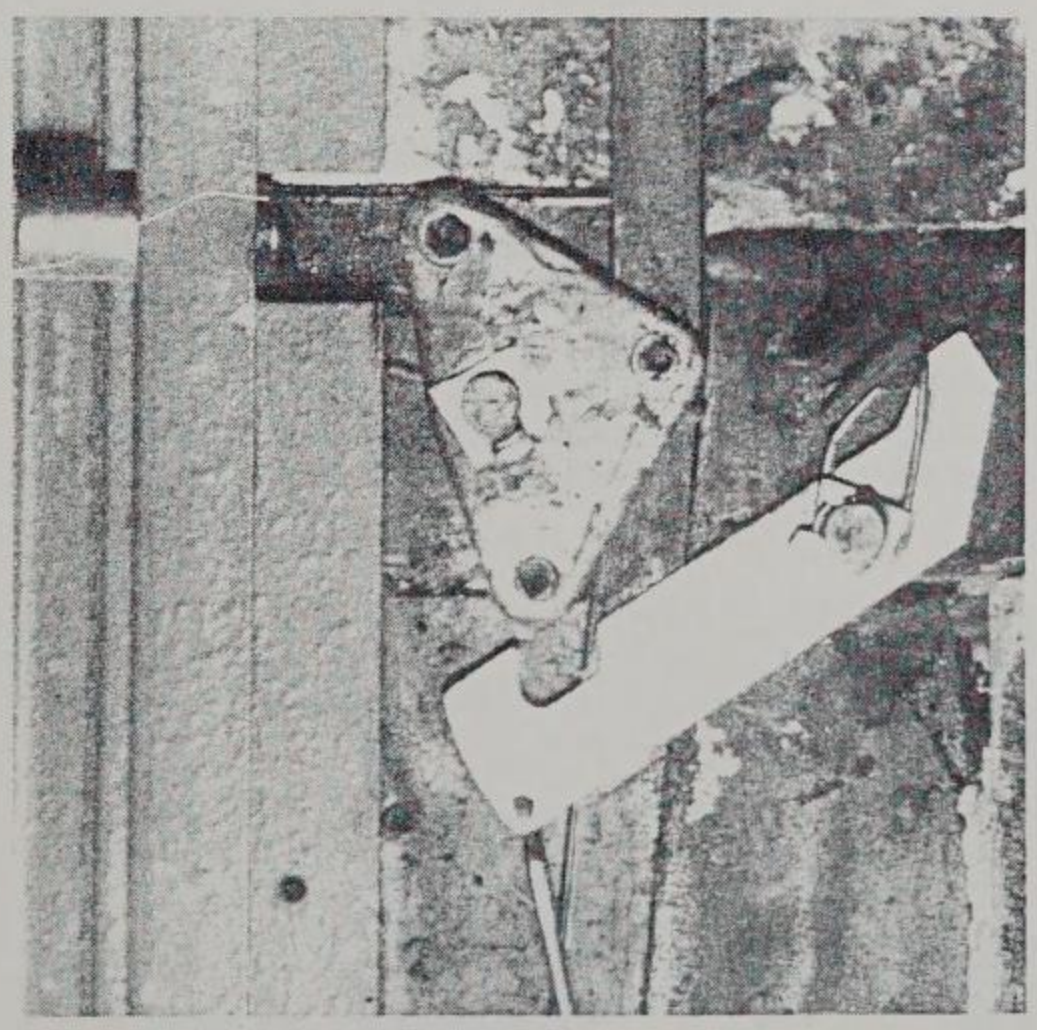
6. Vault opening hole visible here.

but I made him buy breakfast.

As I mentioned earlier in the article, I was called out just a few days later to open a nearly identical door. This time it was Pete Schiff from Atlasta Lock Co. in Portland. I told Pete over the phone that I had just breezed through one, and assured him that it would be a "piece of cake." Mistake #1.

At the jobsite I examined the vault door. It was a right hand door, and my identification techniques told me it also had a B-6 in it.

I went to town. Drilled my hole through the ring at 10, down at an angle toward the lock, and stopped at the hardplate. Opened my carbide bit pouch and sorted through the bits looking for a Strongarm. I was out! Mistake #2. As ridiculous



7. Shown is uppermost side bolt, the idler crank, and the relocking device.

as it may sound, this rattled me a little.

I had to settle for a different brand whose "feel" was also different. Does it sound like I am preparing an excuse? Well, I guess I am. When I broke through, it literally sucked the bit in

about an inch before I could react. Mistake #3. I ended up removing the chuck and using vice grips to twist the bit out.

Looking in the hole, I let out a groan. It was a mess of mangled brass in there. I tried to turn the dial, but it was now frozen. And to top it off, all this happened in front of another locksmith. Boy, did I feel like a real nerd! Thank goodness Pete understands that even the best of us have bad days.

To make a long story long, let me set the scene for you. It was nearing closing time at the business where we were working, and at 7 a.m. the following morning I was flying across the country on business. This meant that if I was going to get the vault open, I had to hustle. What follows may open me up for some well-deserved criticism, but here is what I did:

After finally giving up trying to get the lock to function properly, I drilled and punched the lockbolt back far enough to clear the cam. This, of course, set off the relocker. Two holes later (no hardplate), the relocker was de-activated and the vault was open.

I left the repair for Pete to do the following day (what a guy), apologized for such a bungled job, and went home with my tail between my legs.

They say life is a learning experience, and I sure learned a lot on that particular day. I learned not to be so sure of my skill at angle drilling—going for a scope and read is much safer than going for a direct sight-read. Never again will I tell anyone that it will be "a piece of cake." ■

Educational Programs

Various authors who write for *The National Locksmith* are available to teach seminars in the area of their special interest. These authors each have various rates, and will teach groups of locksmiths and for associations. Following are the people involved: Dave McOmie, safes; Don O'Shall, masterkeying; Jack Roberts, computers; Shirl and Norm Schamp, car opening.

I have changed my approach to the Mosler B-6. On a RH-mounted lock, I prefer to drill straight in from just outside the dial ring at 84. On a LH-mounted B-6, drill straight in from just outside the dial ring at 34. This provides a fantastic view through a scope — you can usually see the wheels and the fence.

A Safe Opening Extravaganza

"In this article you will read about a bunch of safes that were opened by the author and his students. He even ran into a Bischoff X6!"

by Dave McOmie

It's time to answer my mail. I have been approached by a number of locksmith associations about teaching classes on safe penetration. While I am not opposed to giving formal instruction on the art, my preference is really to give informal, hands-on type seminars. I demonstrate various techniques and specialty tools, but the students themselves do the actual safe openings. I have done many of these in the past, and the response has been tremendous.

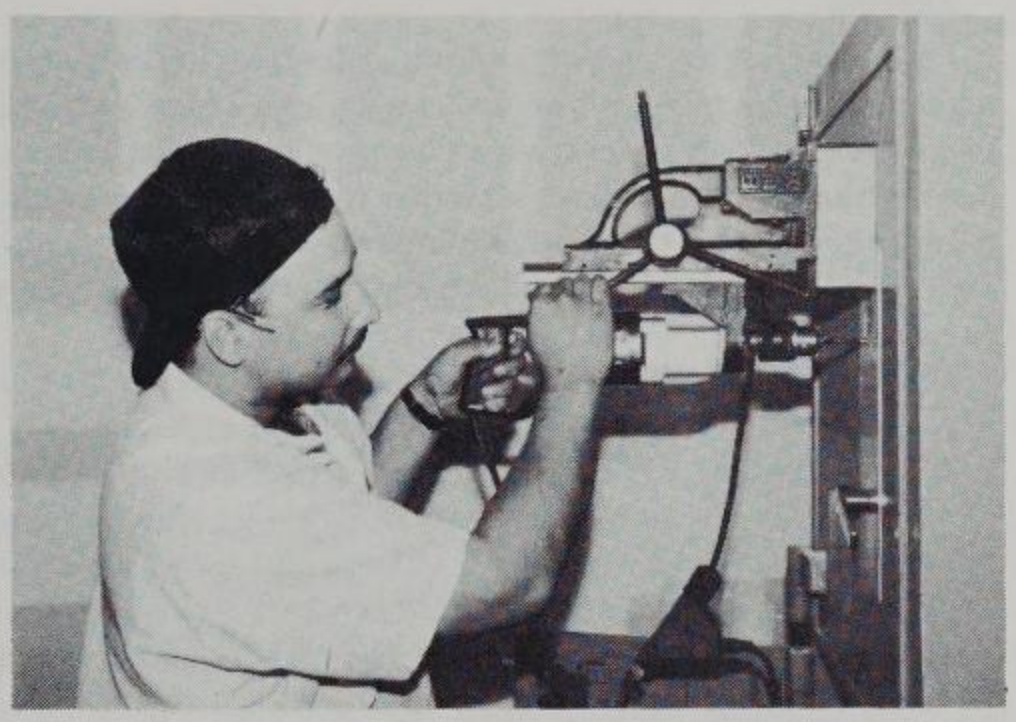
Here is how it works. Get several lock and safe shops in your area to round up as many locked safes as they can (about 4 to 6 for a one-day seminar; 10 to 12 for a two-day seminar). For travel expenses and a small fee I will come to your town and together we will make mincemeat (not swiss cheese) out of all the safes. You can contact me at: Expert Safecracking, P.O. Box 2881, Vancouver, WA 98668.

Speaking of going out of town, I'm just back from a great trip to California. The remainder of this article will be devoted to the highlights of the trip. Here is how it happened...

At this years' ALOA convention I met Jim Reiter, owner of Reiter's Lock & Safe in El Centro, California. Jim needed some drillpoint information on a Murphy wall safe, and also on a Migh-T-Safe. I gave him the information, we shook hands, and made a lunch date for ALOA '88 in Las Vegas. Little did I know that we would be meeting again much sooner.

When I got home from the convention, my phone was ringing. It was Jim. He wanted to know how much I would charge to come to El Centro and open a Bischoff X6. One of his customers had purchased a Bischoff with no combination and no keys, and needed it opened. Well, El Centro is located on the Mexican border about 120 miles east of San Diego. That puts it at about 1,200 miles from my home. I had been planning a trip to California to visit friends and some of the larger safe companies, so I did some quick calculating and shot Jim a very reasonable price (low four figures), on the condition that the job would be done at my leisure sometime during the trip. He got the go-ahead, my vehicle got a tune-up, and away I went, on one of the longer service calls of my career.

First stop: San Francisco. The Bay area is home to my good friend and crackerjack safeman, Steve Williams. Steve's library of patents, literature, and information on safes and vaults is absolutely breathtaking. I spent the entire night skimming the shelves, like a kid in a candy store!

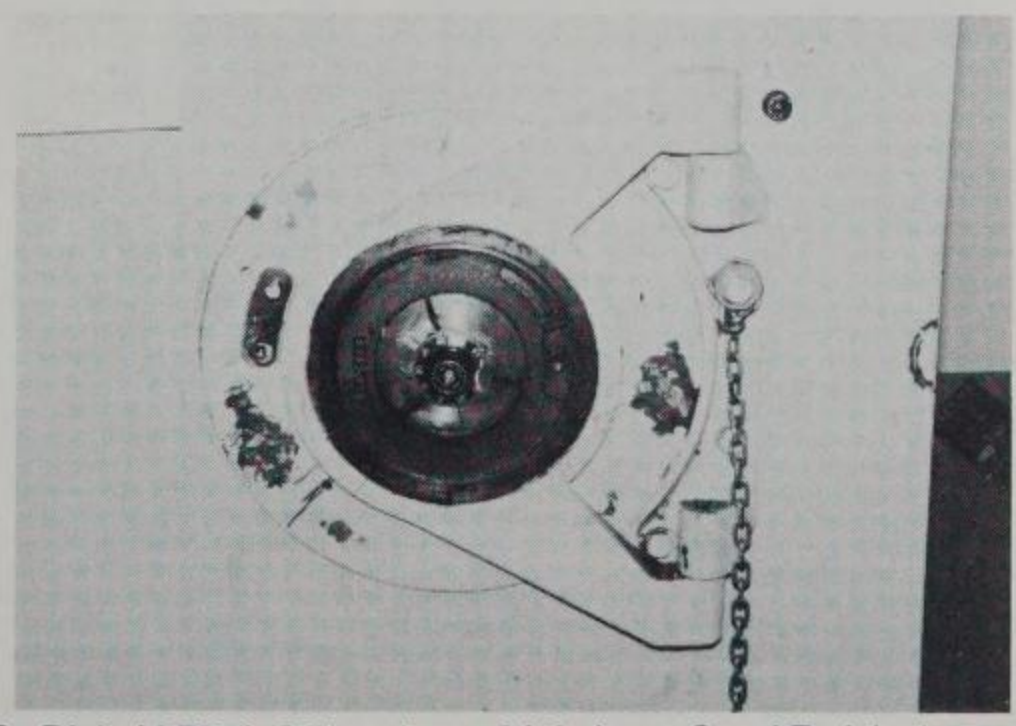


1. Steve Williams drilling a square door chest with the "Baby-Bux" drill press.

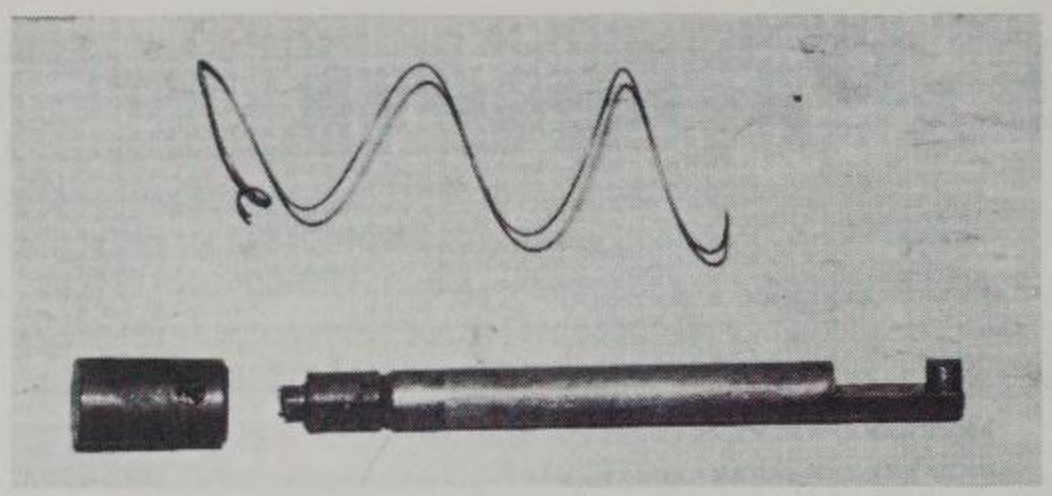
The following day I rode around and observed a well-equipped, conscientious safeman ply his trade. In photograph one Steve is making quick work of a square door chest with his Baby-Bux. This is one of the smallest electro-magnetic drill presses made, and Steve is proud to have purchased his from the legendary Roy Saunders.

We got so busy that Steve sent me off to help fellow safeman Lucky Mazzione open a Diebold TRTL-30 lug door. The symptoms were that the combination could be dialed, drop-in felt, and the dial would travel the usual 25 numbers to the stop position, but the door would not budge.

I had never had this happen, but theorized that somehow one of the locking bolts had become disconnected. I drilled for the 7 o'clock bolt, but it was retracting perfectly. My next hole was on the 3 o'clock bolt, and sure enough, that was where the problem was. I yanked the spring out, fished the bolt back, rotated the door enough to hold the bolts unlocked, and snapped off photograph two. You can see the two holes in the door at the 3 and 7 o'clock positions.



2. Diebold TRTL-30 lug door with holes at 3 and 7 o'clock.



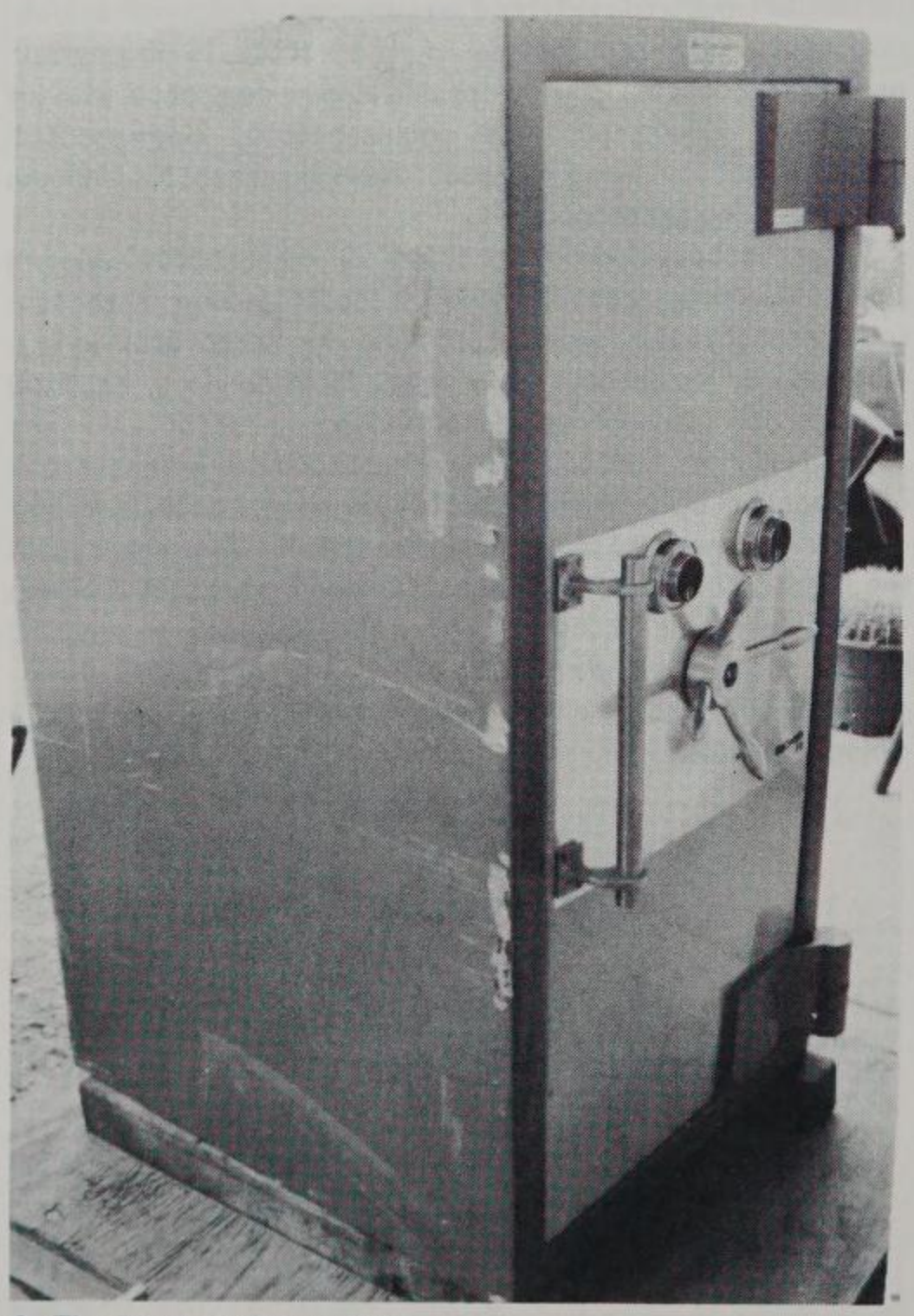
3. The two section locking bolt with a roll pin found in the Diebold.

Photograph three shows the culprit. These locking bolts were manufactured in two sections, with a roll pin holding everything together. The small, inner section fractured right at the roll pin, leaving the end of the bolt extended in the locked position. Above the bolt is what was left of the spring after I yanked it out. This type of malfunction was a first for me, and I was happy to have opened my first safe in San Francisco.

After some strawberry pie, and with Steve's advice to "watch those L.A. freeways" fresh in mind, I headed south on I-5.

At Los Angeles I headed east and arrived at Jim Reiter's home in El Centro just in time to hit the sack. I was bushed. Jim woke me up with the roosters, and we went out to meet the Bischoff.

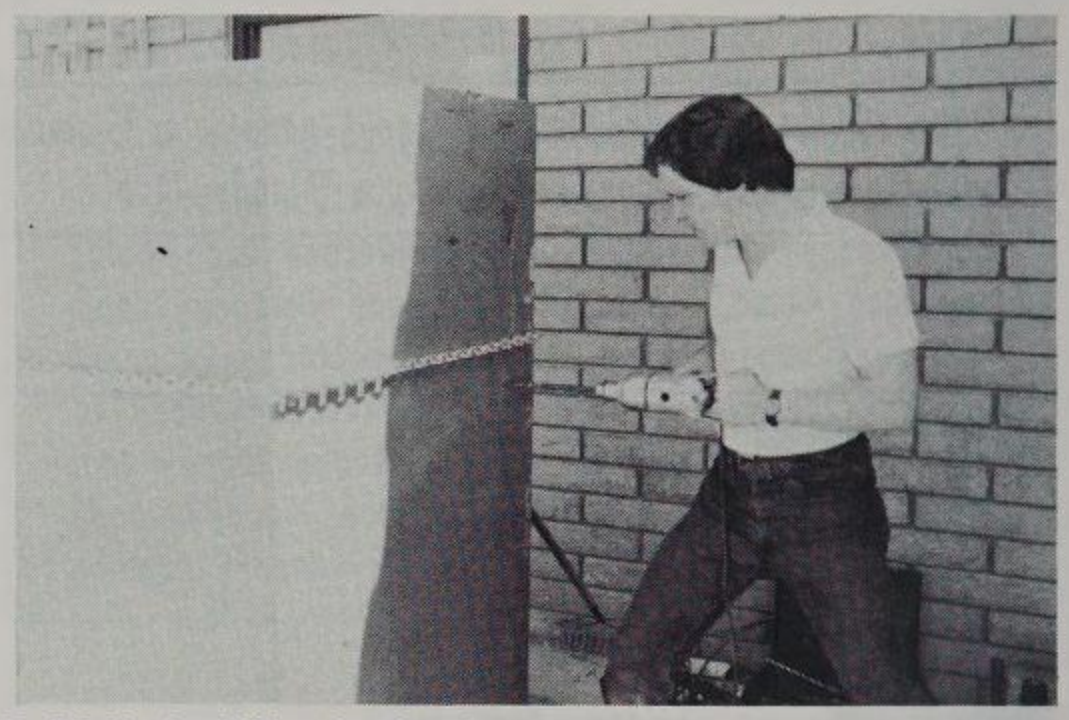
Photograph four shows our adversary, the South African made Bischoff Summit X6, which carries the prestigious U.L. TRTL-30X6 label. These super safes utilize dual 8400 or 8500 series Sargent & Greenleaf locks, and a triple duty eight lever



4. The Bischoff Summit X6.

keylock. Triple duty in that the keylock performs three functions: 1) it blocks the main horizontal bolt rail; 2) it controls the yoke immobilization arm, and 3) it actuates the active relocks.

After consulting my photographs, drawings, and notes one last time, I went to work. In photograph five I am drilling freehand through the outer skin, and am penetrating the infill just prior to hitting the barrier material.



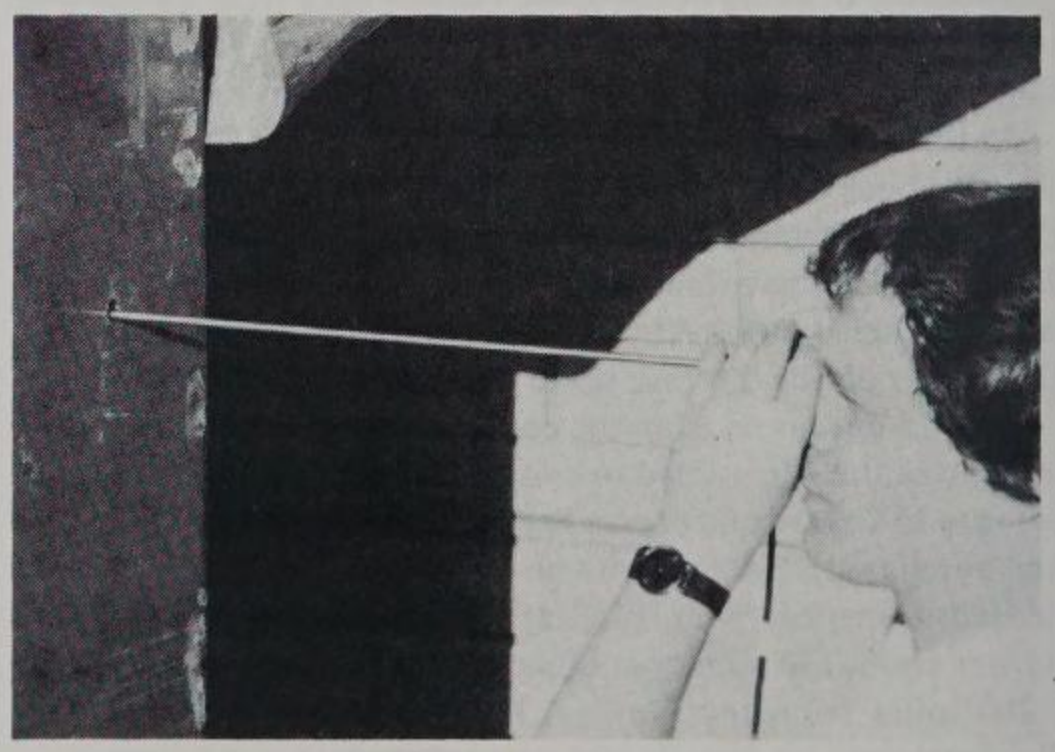
5. McOmie drilling freehand.

Penetrating the barrier material on a Bischoff X6 is an experience in itself. It is not as hard as Relsom, but is much, much thicker. Thank goodness for long drill bits.

In photograph six I have inserted one of my 28″ scopes to check things out. About this time I began to sweat. Literally. Jim had warned me about the heat, but I really had no idea what 110° in the shade felt like until this day. The safe was outside and it was hot. Jim had me continually sip water, which certainly helped, but I am from the Pacific Northwest and us webfoots just ain't used to so much sun!

A little more drilling, and a little more fiddling, and all the locks were neutralized. Ka-chunk, the handle rotated, retracting the massive bolts, and the Bischoff was open.

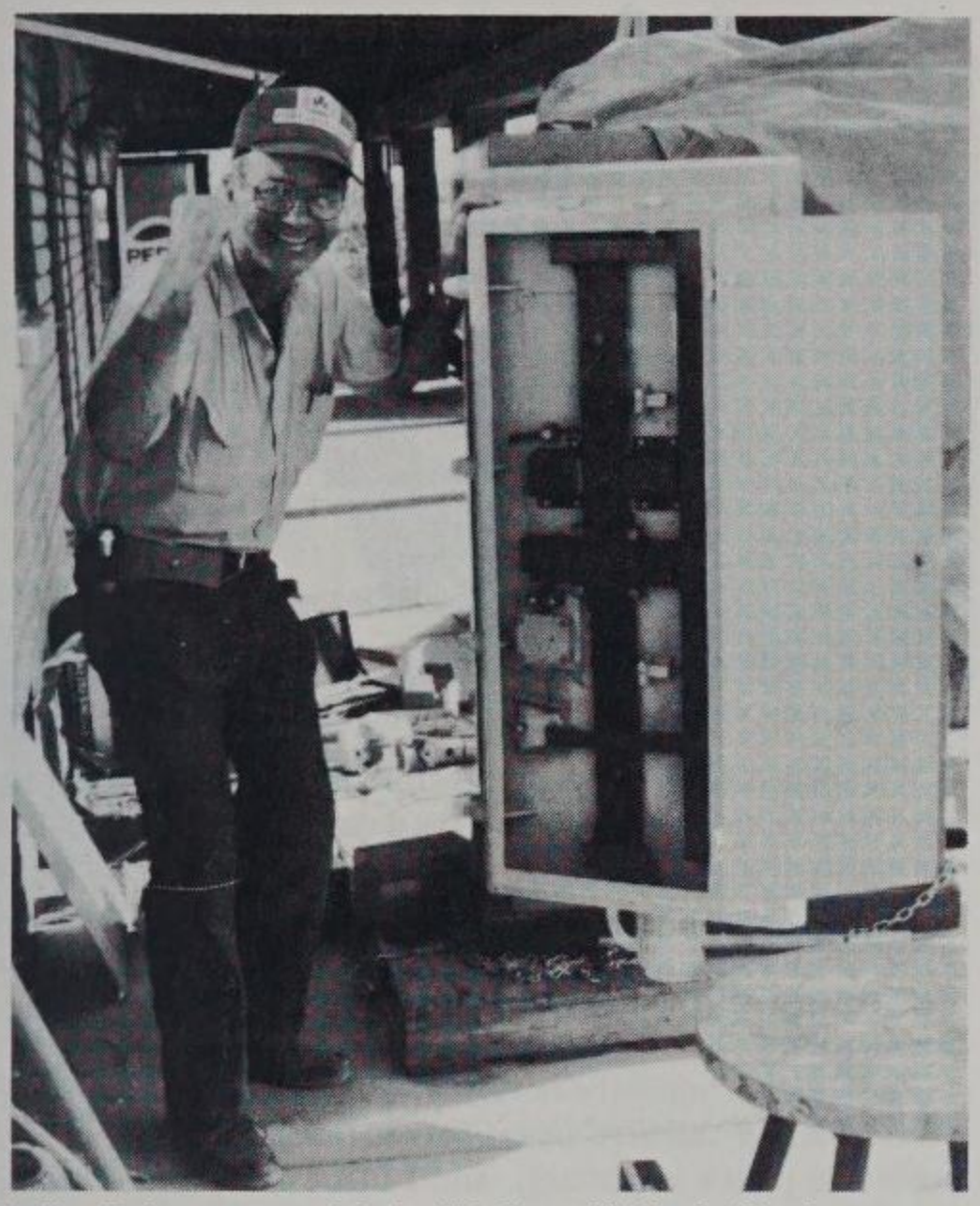
In photograph seven, Jim strikes a victory pose next to our worthy, but defeated opponent. To celebrate, we crossed the border and had a superb dinner in Mexicali, Mexico.



6. Using a scope to check the hole.

The following morning, Jim and I headed for Los Angeles to take part in a safe opening seminar.

In conjunction with the CLA, Cliff Cox, president of La Tourette, had rounded up half a dozen locked safes, and invited various drill rig manufacturers in to demonstrate their products. This was a novel idea, to put the rigs through their paces, not in laboratory conditions, but on real safes that need to be opened. The Magnum .357, the Sureshot II, the Strongarm, and the Broco Prime-Cut were all there, patiently waiting their turn.



7. Jim Reiter poses with the "defeated" Bischoff safe.

Cliff started the show off in style by opening an old Mosler in under a minute. He then pulled out his bag of tricks and demonstrated some exotic tools for compromising safe deposit locks. Cliff is a recognized world authority on these locks, and watching him fly through them like Houdini at his best was a real treat.

When it came time to put the drill rigs to work, Bill Nowman, inventor of the Magnum, volunteered to go first. Using a Learning Unlimited template, I deduced, marked and center-punched the drill point on a Mosler TL-30 square door, and turned Bill loose.

Bill attached his rig, and in photograph eight he is penetrating the mild steel as Cliff Cox observes.

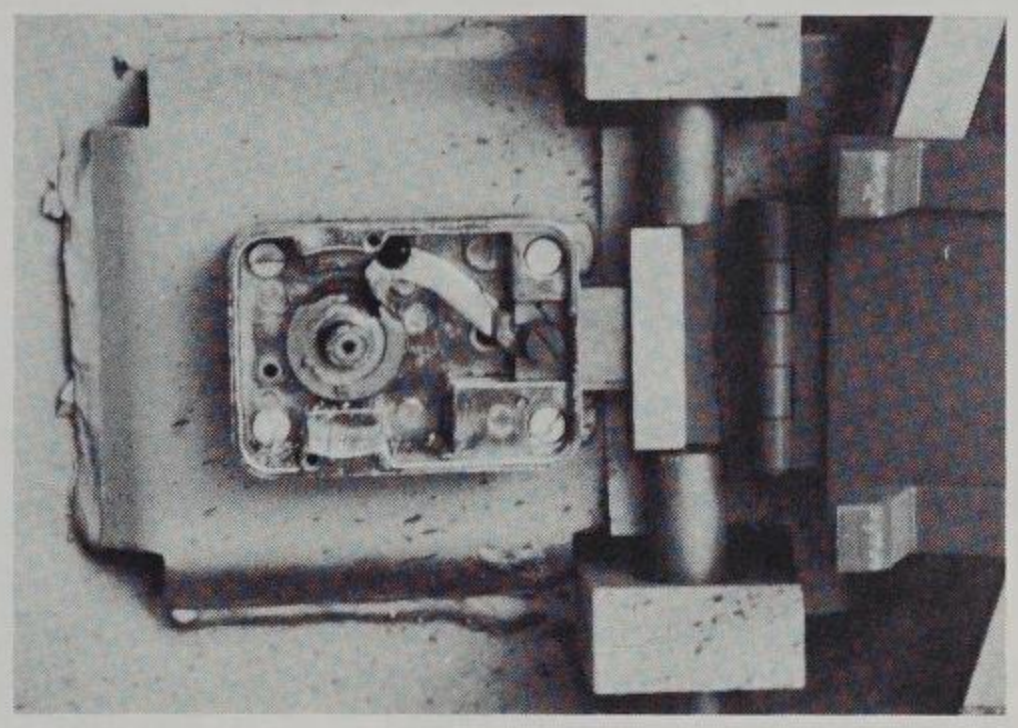
When the hole was down to the hardplate, I peeked in with a straight light and was a little surprised to see my old friend ...Relsom!

This was a great opportunity to put Bill's new Diamatip bits to the test. I have to admit, I was a little skeptical, but Bill

8. Bill Nowman of Magnum fame penetrates a Mosler.

chucked in a 5/16" diamond tipped hole saw and it worked beautifully. When Bill removed the Relsom plug, we could see an actual cross-section of the plate, and I was amazed that the Relsom was less than 3/16" thick. I swear that every one I have drilled has been ⅜" (and a few of them felt like they were 3 feet) thick.

Before we go on, let me make a few observations about Relsom. In my experience, I have encountered three different grades of Relsom. The material we hit in this square door was what I call Grade 2 Relsom. Mosler used this in some of their GSA containers back in the early 70's. The carbide chips are not nearly as densely packed as Grade 1 Relsom, but it is still darn tough stuff. The composition and matrix of Grade 2 is very similar to the Maxalloy D plate (which makes sense, since Relsom was manufactured by the Schwayder Co., the same



9. Close-up of the MR 302.

people who manufacture Maxalloy today). Grade 1 Relsom, which I have found only in Mosler's TRTL-30 lug doors manufactured in the 1960s, is still the best hardplate. This is unquestionably the most drill-resistant material ever made. I have had plenty of experience with it, and the next one I butt heads with is going to get Broco-ized.

Grade 3, or Relsomite, is what you will find in the great majority of GSA containers. This is a hardened plate with a thin coating of carbide dust, and is not nearly as difficult to penetrate as the other two. Enough said.

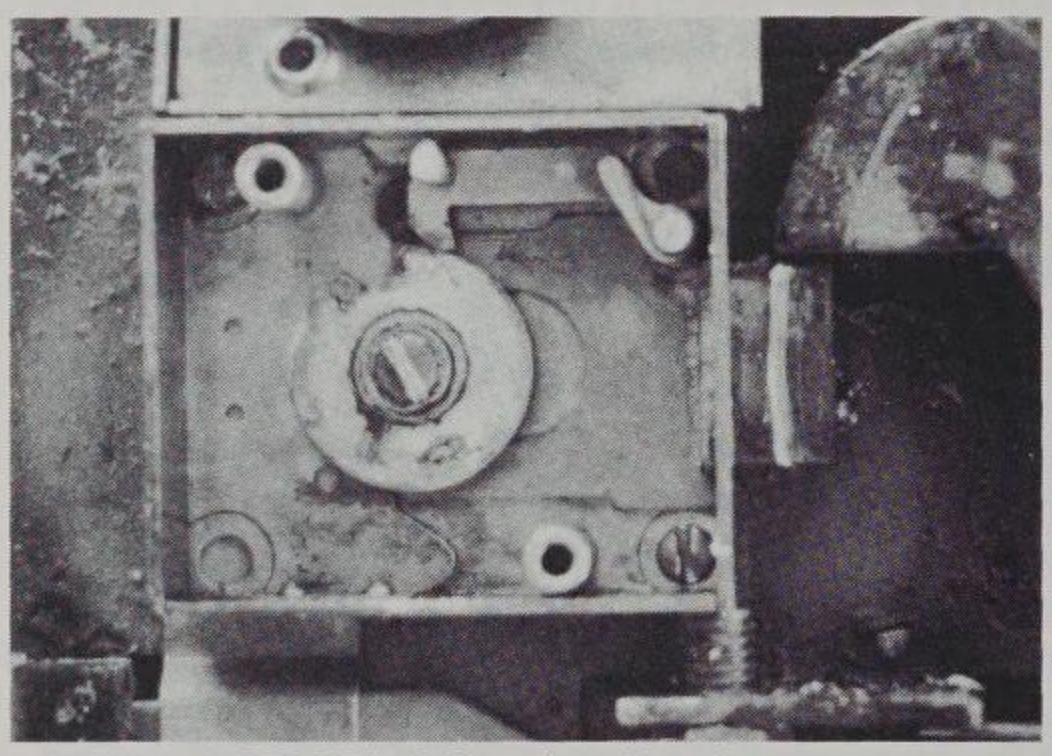
Photograph nine is a close-up of the RH mounted MR302 on the inside of the square door.

Next up was another Mosler. I marked the drill point, and in photograph 10, Mike Rogers of La Tourette is blazing away

10. Mike Rogers demonstrates the Broco.

with the Broco. What can you say about a tool that will go through any hardplate in a couple of seconds? It is impressive, easy to use (I own one), and if handled properly is as safe as any power tool. I prefer the Broco over other imitators because everything is pre-assembled in a briefcase. Open the case, insert a rod, turn the oxygen on, and you are ready to go. I have three sheets of imitation asbestos cloth that set my mind at ease around carpet and office furniture.

Photograph 11 shows the lock on the inside of the Mosler. This is one you don't see too often, Mosler's #MR-98, which is a close cousin of the RB-104 which we have discussed in the past.



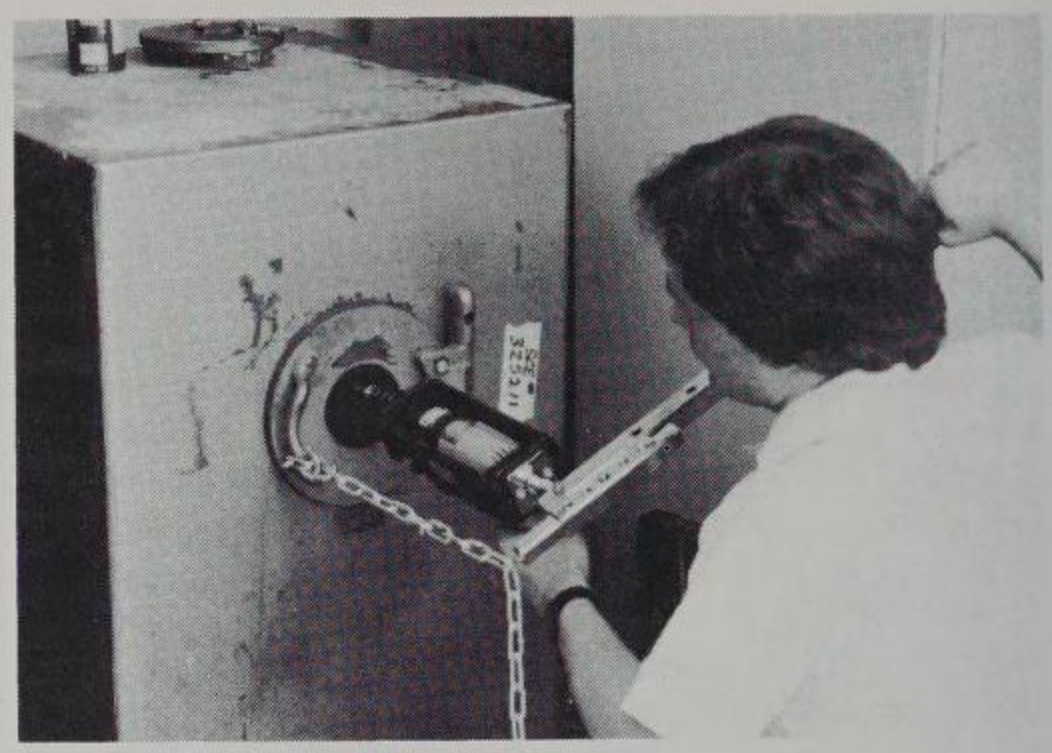
11. Mosler's MR-98 lock found on this safe.

Next up was a Mosler GSA file and the Sureshot. Once again I deduced marked, center punched the drillpoint, and got out of the way. No one in attendance (about 20 of us) had used a Sureshot, and there were no instructions supplied, but a couple of mechanical minded attendees got things rolling. In photograph 12, Jim Reiter is putting pressure on the hardplate, which was Grade 3, or Relsomite, if you prefer.

12. Jim Reiter testing the Sureshot on Relsomite.

At this point we had the only snafu of the day. All of a sudden, smoke started pouring out of the area behind the chuck on the Sureshot. I'm not sure what happened or why, but something was definitely starting to burn up, so I had the guys remove the drill rig. Bill Nowman stepped in and completed the hole with his Magnum, and the file was open in a jiffy.

By this time it was late afternoon and I could stand it no longer. I had been determining lock models, handings, and deducing drill points all day; it was my turn to push on a drill. So I grabbed my Strongarm rig and put a hole in a Pacific round door in two minutes flat (*see photograph 13*).



13. Dave McOmie drills a Pacific round door in 2 minutes flat.

We opened a few more safes before finally calling it a day. Several of us sat down to discuss the days' events and compared the merits of the various drill rigs. We unanimously agreed that there was no single "best" rig. The serious safeman needs a combination of rigs, and in my opinion, having a Broco, a Baby-Bux, a Magnum, and a Strongarm would be the ultimate. Santa, are you listening?

I headed for home the next day, with a good feeling in my heart. The trip had been successful (all the safes were opened), profitable (that's important), and I made many new friends. What else could a person ask for?

Before signing off I would like to publicly thank the William's, the Reiter's and the Cox's for the hospitality they extended me. I can't wait to make a return trip. ■

Jim Reiter and I had a blast opening the X6 Bischoff, but I have never been so hot and miserable in all my life! The misery, though, was mitigated somewhat when the customer paid in CA$H. Once again, I was responsible for the fence being drilled off in a perfectly good Mosler 302. Reminder: on a functional 302 mounted RH, don't drill the fence off. Drill a great scope hole at 85 x 1-3/8". Drill the fence off only in case of a malfunctioning lock. The drill point for drilling the fence off a RH-mounted 302 is 91 x 1".

I was saddened by the passing away of Cliff Cox, who hosted the gathering in Los Angeles. He was really on that day, opening safe deposit locks in seconds and sharing slick tricks with everyone. You were a true gentleman, Cliff. We miss you.

'Cracking' A Herring Hall Marvin

"I was buying a car when the finance manager told me he had an inner chest with a lost combination. He didn't have to twist my arm to do the job."

by Dave McOmie

A few months back, I began a column by observing that some jobs sure come in the most unexpected ways. Well, another unexpected job plopped into my lap recently as I was out looking for a car.

Sitting in the finance office of a prominent local dealership, I espied a safe off in the corner (*see photograph one*). Even from 15 feet away I recognized it at once as a Herring-Hall-Marvin from the distinctive handle. I kept quiet.

The finance manager was looking over my credit report, and I waited for his reaction. They all react to my occupation. It may sound a bit flamboyant, but I always list it as "safecracker." Safeman and safe technician are terms that are understood in our industry, but out in the real world they produce reactions like, "Oh, are you an OSHA inspector?" or "Yeah, well what's an unsafe man? Yuk, yuk."

I prefer the word with the crystal clear meaning, which leaves no doubt in their mind what I do for a living. Besides, I guess I do get a charge from watching people's reaction.

Sure enough, in a few seconds he looked up and said, "a safecracker, are you serious?" I replied that yes, I was serious and assured him that I do it quite legally, not as a burglar.

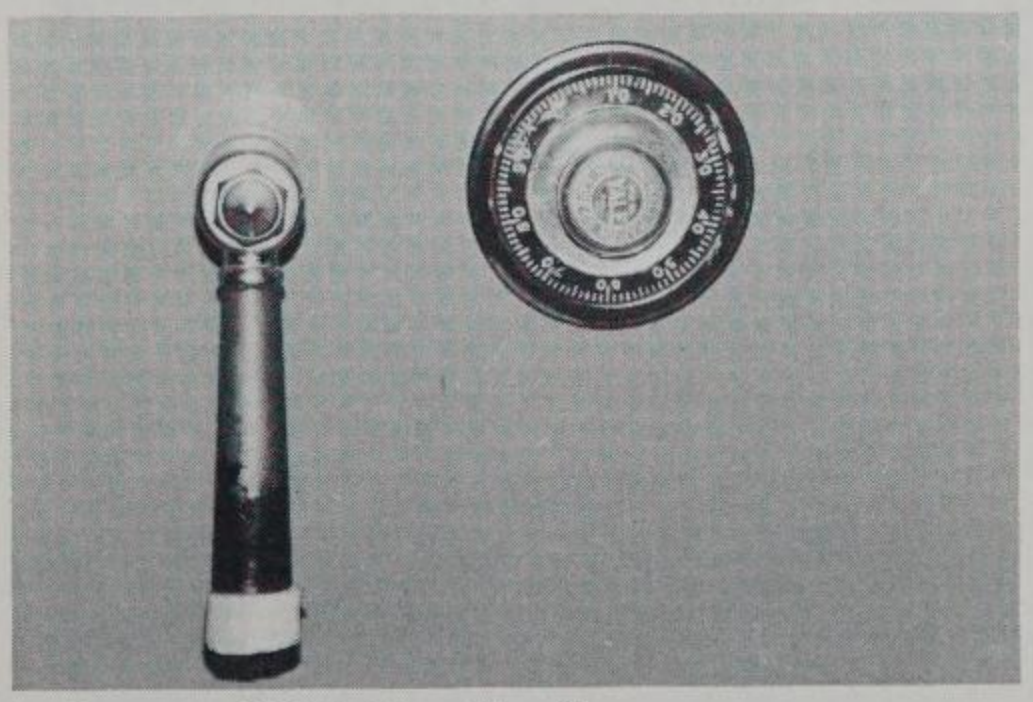
He promptly stood up and said he had a job for me. There was an inner chest with a lost combination that needed to be opened. Well, he didn't have to twist my arm; I was back with my little black tool kit before he finished his sentence.

Before we get into the opening of the chest, let's finish our tour of the fire safe. In photograph two we have a close-up of the dial and handle. The distinctive feature on the handle is the large nut. This just screams out, "I am an HHM." Of course, up close we can also read the lettering on the steel dial, which tells us not only the manufacturer of the safe, but also of the lock, which was manufactured by Yale.

Although it may look cast iron, this is actually a pressed steel, insulated safe, probably manufactured in the late 1920s or early 1930s.

In photograph three we have a close-up of the lock. This is Yale's model HE, which is similar to the OB, with one important difference, however. The OB uses a weighted lever that drops in by sheer gravity when the combination is properly dialed, and the dial will come to a positive stop. On the HE, the dial does not come to a stop. After dialing the wheels into

1. Herring-Hall-Marvin Safe, spotted at car dealership.

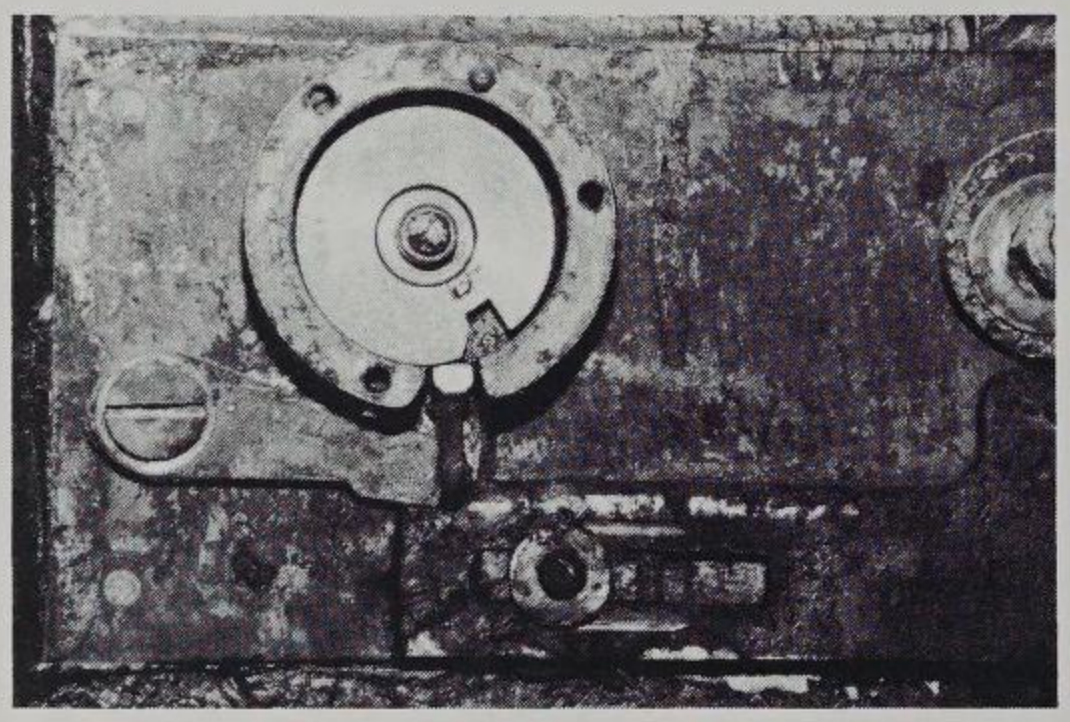


2. Close-up of HHM dial and handle.

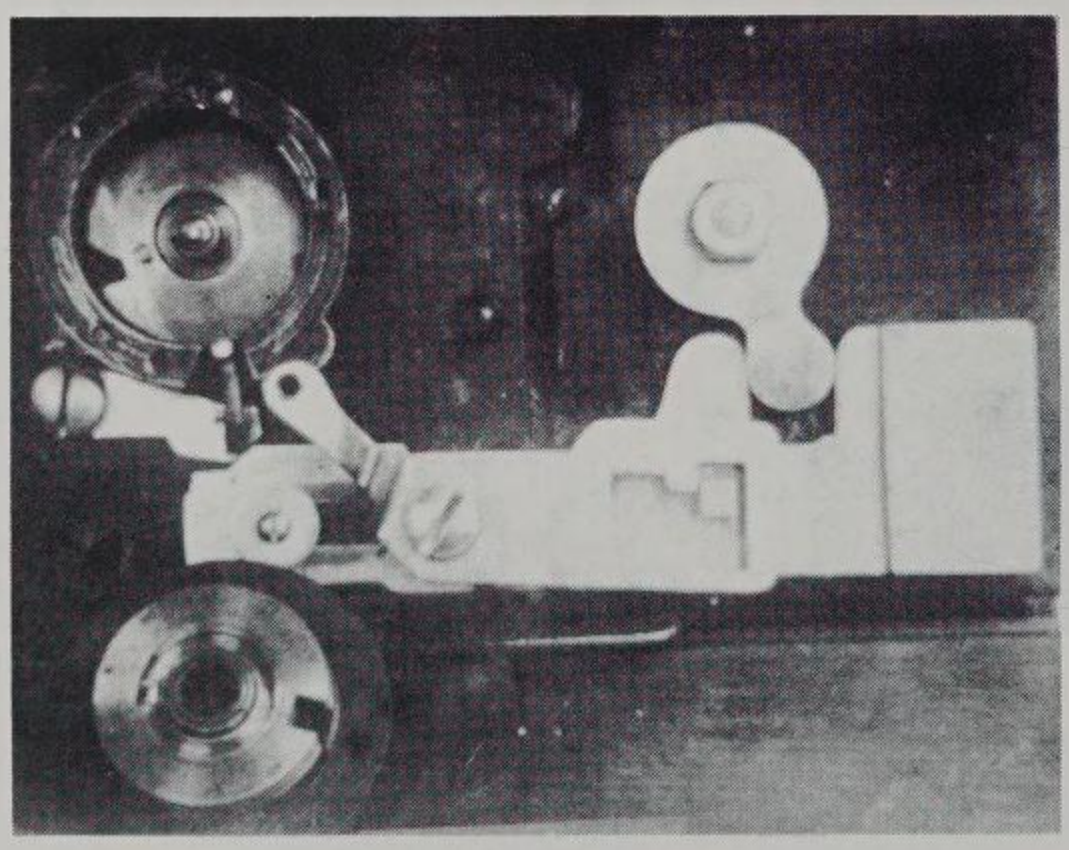
alignment, the dial must be returned to 0, putting the driver gate into position. Now the handle can be thrown, forcing the fence up into the gates and allowing the bolts to be retracted.

This feature allows these locks to be manipulated in much the same manner as a straight-tailpiece type lock. It also helps in identifying the lock. If you have an old HHM, and turning the handle causes the dial to bind severely, the odds favor an HE being on the inside. It is a good idea not to use the handle appearance to try and identify the lock. It is true that a T-handle usually signifies an HE, but the three basic types of HHM L-handles were used with a half dozen different locking arrangements. Stick to the aforementioned identification technique.

Some HHM's with HE locks came with external relocking devices, and some didn't. As I write this article, I am not sure what or where the dividing line is between those with and those without relockers.



3. Yale's model HE lock.

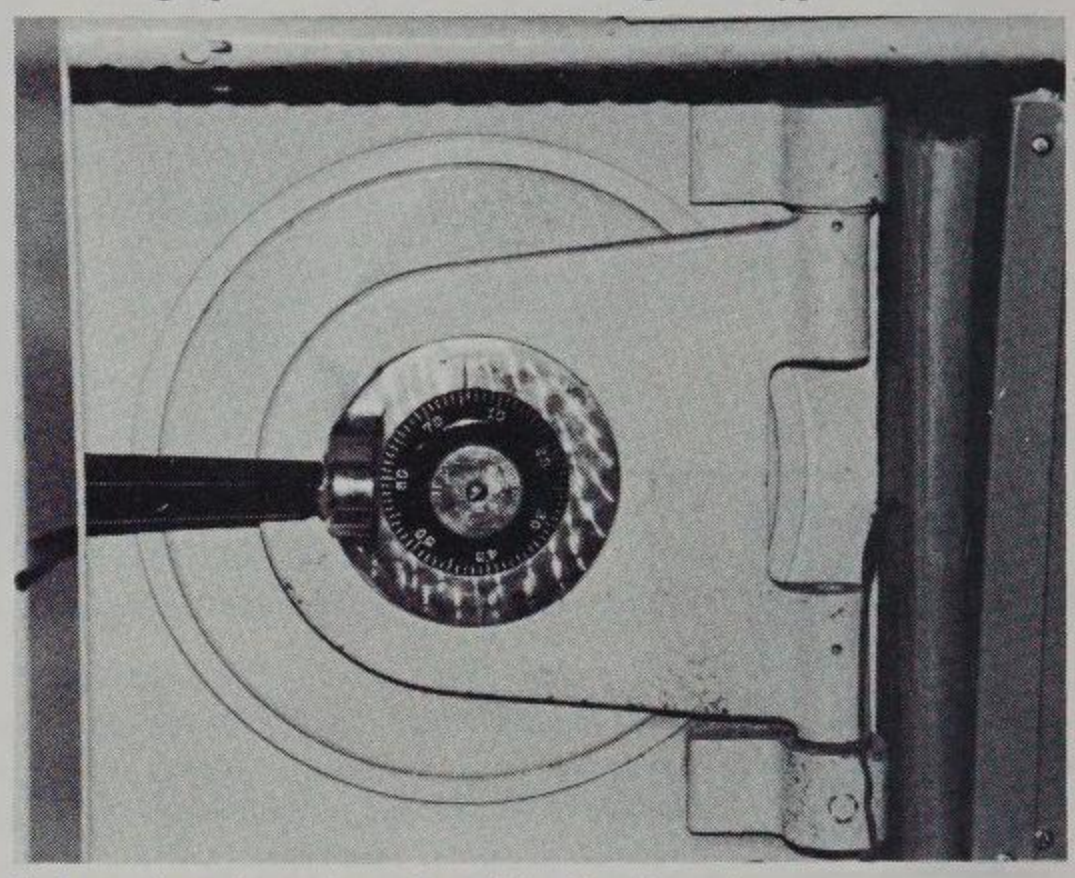


4. HE shown with the relocker attached.

In any event, photograph four shows an HE with the relocker attached. It is very similar to a Hall's. Mosler also used a shorter version of a similar relocker. For that matter, I should add that Mosler's #10½ is so uncannily similar to the Yale HE, that I can't help but wonder if Yale didn't actually manufacture the #10½ and put Mosler's name on it. If anyone reading this knows the answer, drop me a line.

When drilling an HE, it helps to distinguish cast iron from steel. The cast iron safes have the lock mounted right under the outside skin, at a depth of around 1". The steel safes have the lock mounted at a depth of 2" to 4", depending on the fire rating. This is a helpful piece of information to have when you are angling in from outside the dial ring. We all know how nice it is to be right on the money with your first effort, without having to re-aim the hole.

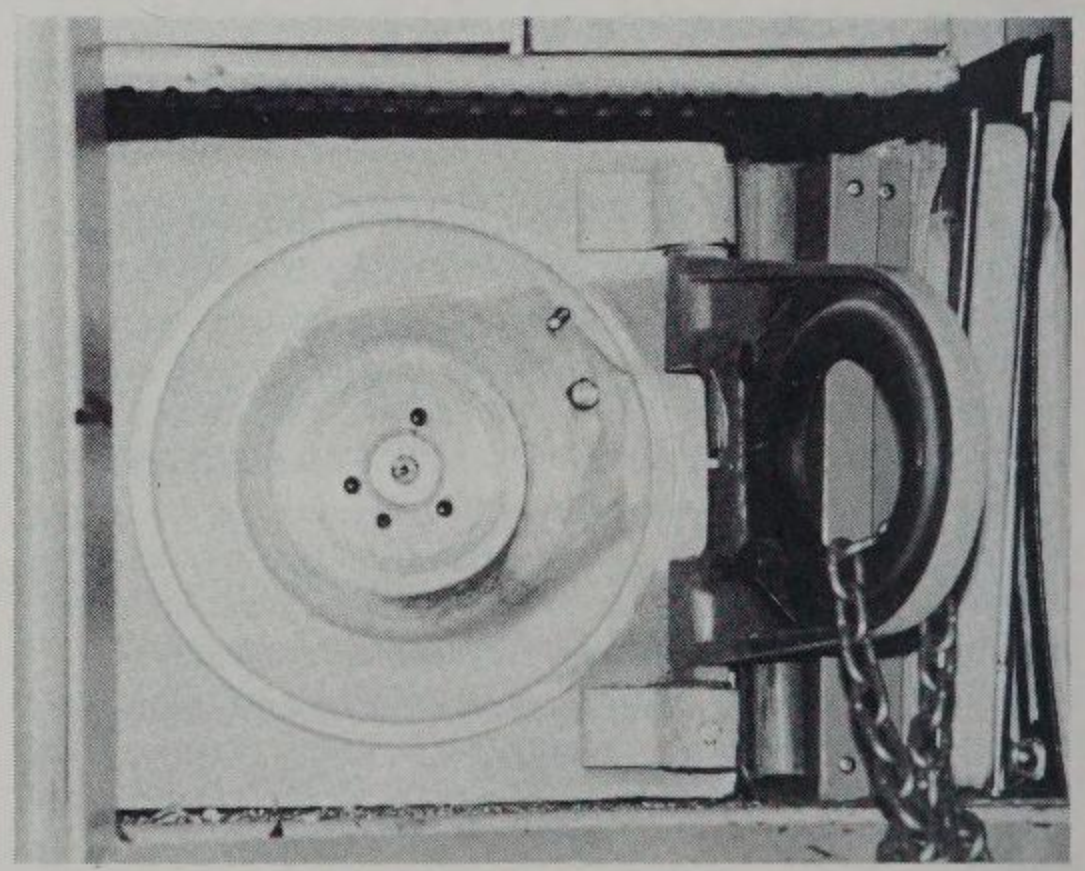
Photograph five shows the inner lug-door type chest.



5. Inner lug-door chest found inside the safe.

I went right to work. I backed out the screws from the center of the 70 # dial, and off it came. Next to go were the bearing plate screws and the bearing plate. I swung the crane hinge out of the way, drilled my ¼" hole, and snapped photograph six.

Lining up the gates was kind of a pain, because the driver is in front, and there is not much of a gap between the edge of the wheels and the lockcase with which to see over the driver and view the wheels. So I had to use the reverse procedure. In this process, you line up the driver gate, record the number, then move the wheels 5 numbers at a time and return to the driver



6. Lug door with the crane hinge out of the way.

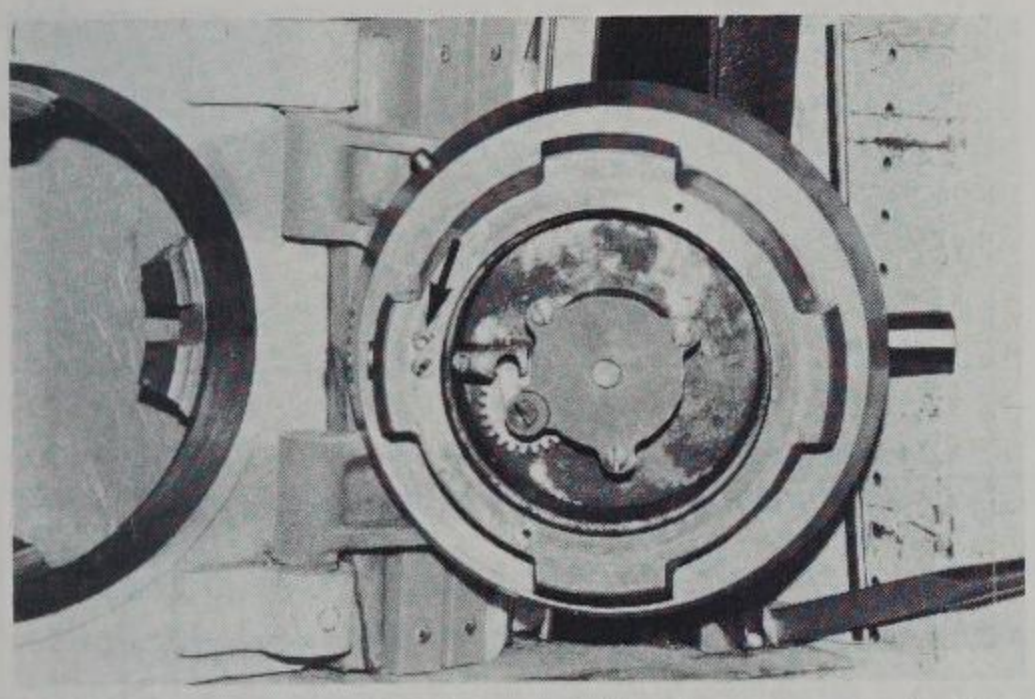
gate. You can see the wheels through the driver gate, and you keep moving them until you find the gates. If you haven't tried it, take my word for it, this is a tedious but necessary skill to have in your reportoire.

Transferring the numbers to drop-in, which is a hair below 3 o'clock, or #19 on the 70 # dial, I felt the fence flop in, and tuned the spindle to the stop position, retracting the single locking bolt.

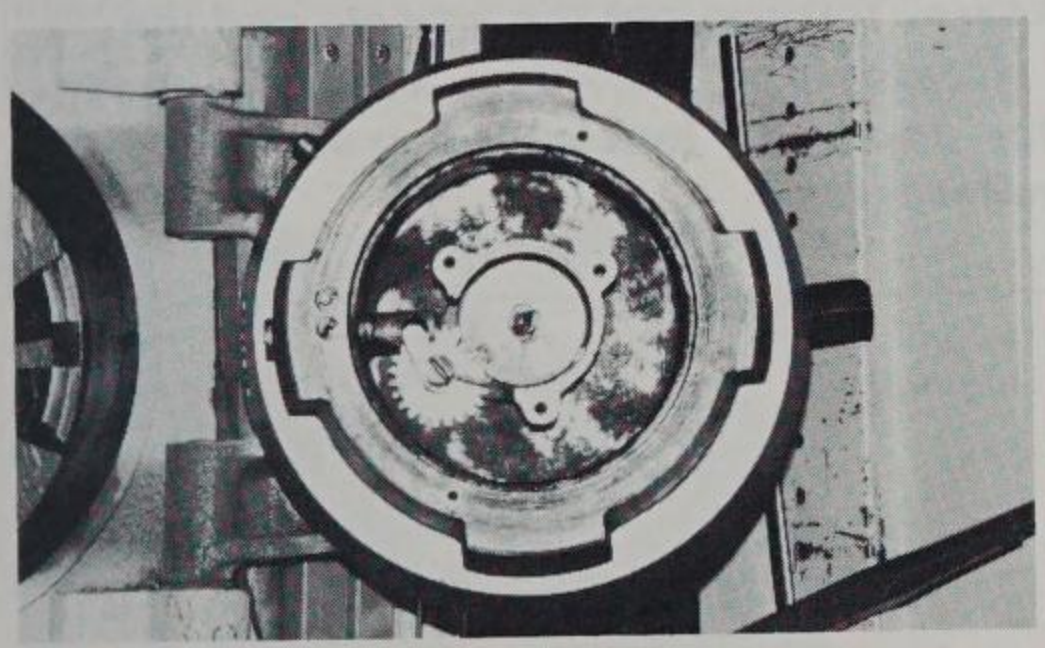
In my "old age" (30), I am becoming a little wiser. Instead of attaching the crane hinge and opening the safe, and then having to close it, take it back apart and repair the hole, I went ahead and made my outside repair before opening the door! It is a

good idea to duct-tape the spindle in the unlocked position before doing the repair. This ensures that vibrations will not allow the safe to lock itself back up, which also means that you won't have to cuss yourself out as you drill through your own repair job to get the safe open again! On a lug door you can also rotate the door slightly, which puts the bolt(s) out of alignment with the slots in the lugs.

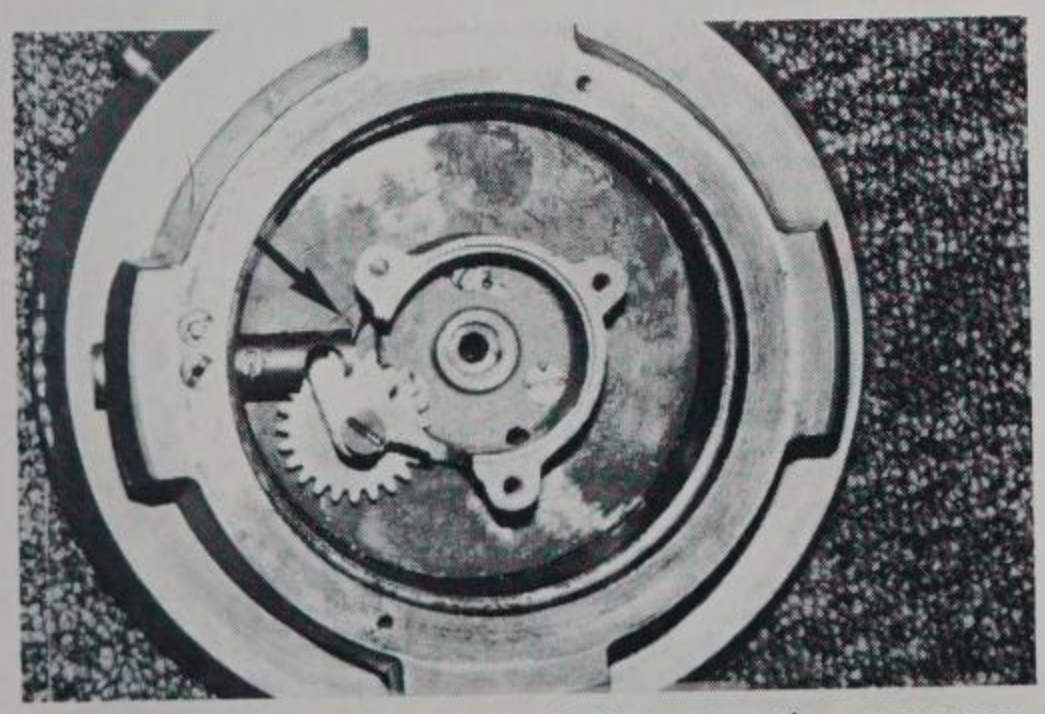
After completing the outside repair, I attached the crane hinge, rotated the door and swung it open. I removed the back plate and snapped photograph seven. The arrow is pointing to the end of the external relocking device. This spring loaded device is held in check by the back plate.



7. Back plate removed with arrow indicating external relocking device.



8. A clear view of the lock is seen here. Notice the large gear.



9. Close-up with driver removed. Note mounting screw positions, the position of the hole drilled, and alternative hole position (marked).

In photograph eight the back cover has been removed, giving us a clear view of the lock. Notice the size of the gear under the roller fence; now that's a big un! It is also the reason we do *not* drill at the drop-in point on this lock.

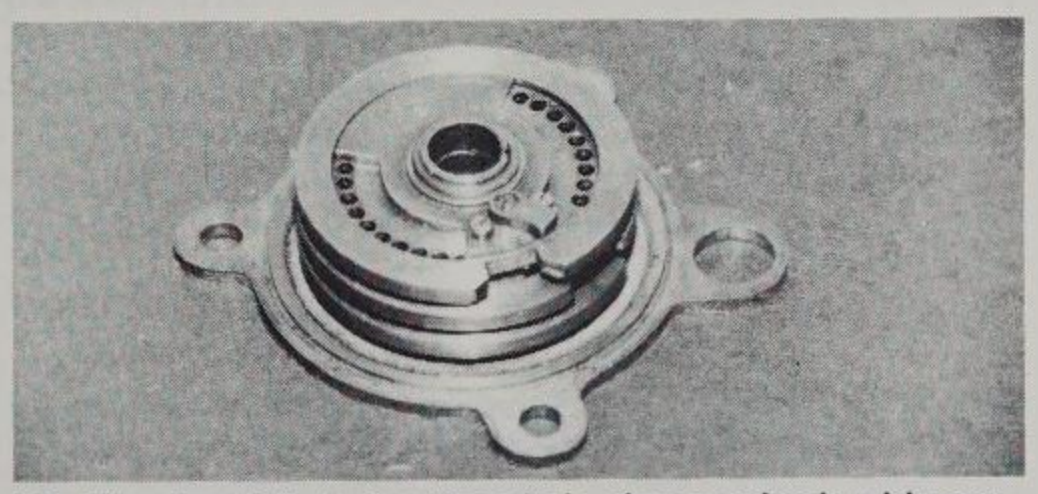
In photograph nine I have removed the driver and zoomed in for a close-up. There are three things I would like to point out in this photo. First of all, the position of the three mounting screws. Secondly, the position of my hole. This was a good, clean hole that penetrated the lockcase in a safe area and did get the safe open. But thirdly, let's analyze this photograph for a moment and see if there wasn't perhaps an even slicker place to drill. I realize it may sound like hair-splitting to talk about improving the drillpoint, when the one that was used worked very nicely, but I believe this is a point that needs to be raised. I am talking about using an entirely different technique. Instead of drilling for the edge of the wheels, why not stay completely away from any vital parts and use a borescope to actually watch the gates line up right under the fence?

I use this technique routinely on chests with indirect drive locks, like the Yale #025½, 029½, and 063½, but for some reason I have neglected it in many other instances where it would be advantageous to use. There is certainly nothing unmanly about using an easier way, and when I stop to consider the investment I have in my five (yes, 5!) scopes, it is almost a sin not to use them at every opportunity.

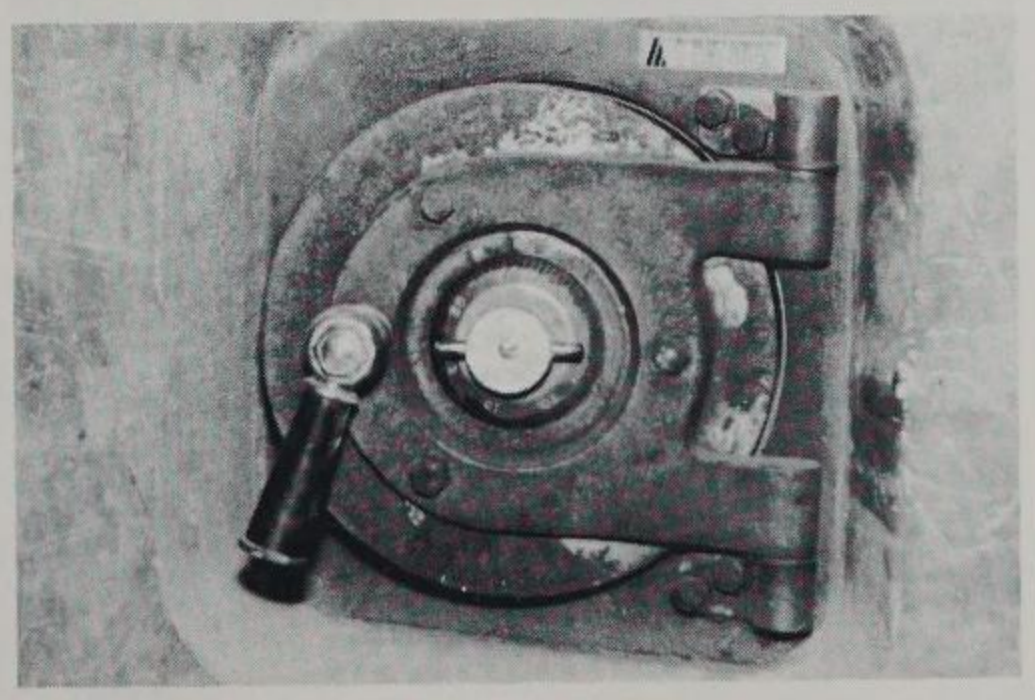
The only catch here is being able to say with certainty that this is the lock on a given HHM chest. Here is a simple litmus test you can apply to any HHM chest: if it has one 70# dial with a screw in the center, the odds greatly favor it having the lock we have discussed.

If it has two dials, forget it. If it has a 100# dial, forget it. If there is no screw in the center, forget it.

Next, we have the wheel pack to examine, and I want to bring your attention to a popular non-lug door that uses the same lock only mounted differently.

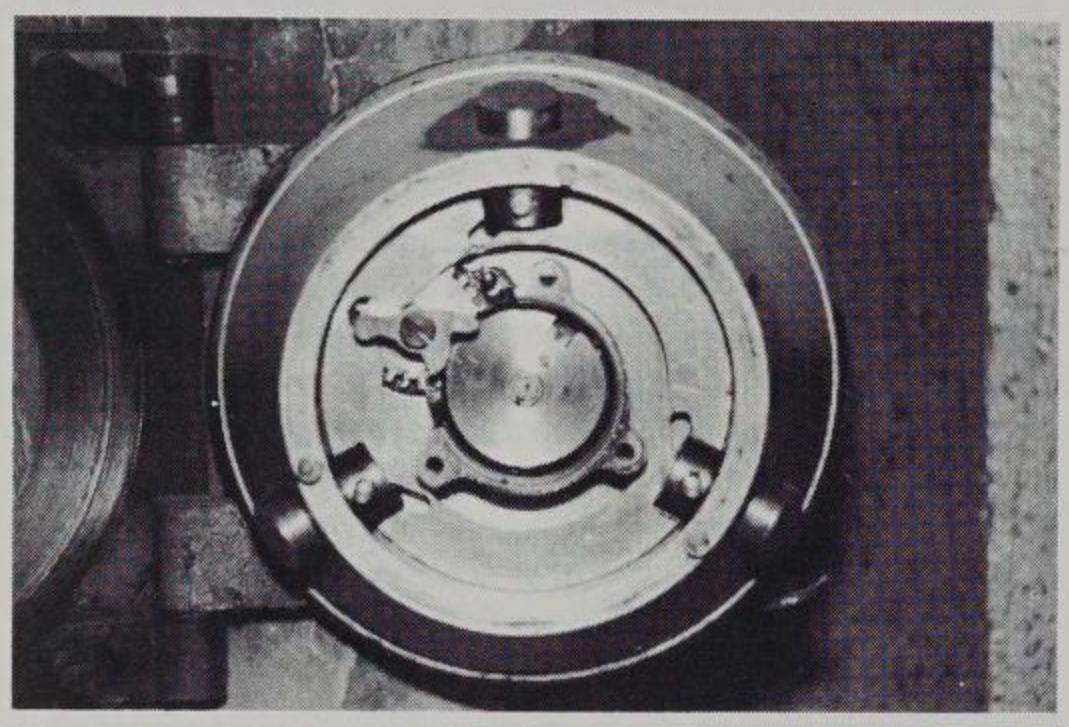


10. Wheel pack featuring three hole-change wheels with movable flies.



11. Non-lug door with single 70# dial.

Photograph 10 shows the wheel pack. There are three hole-change wheels with movable flies. These identical wheels, in varying sizes, will be found in the Hall's Premiere locks, and strangely enough, you will find them, in the lock on Chicago safes. Figure that one out.



12. Inside view of non-lug door.

Photograph 11 is the non-lug door I mentioned earlier. This door does not rotate to open; the handle is only for pulling the door open. Notice the single 70# dial with the screw in the center.

Photograph 12 is an inside view with the back plate and back cover removed. As you can see, this is a tribolt door with three pretty good sized locking bolts. Each bolt has its own relocker that goes off when the back plate is removed.

You may have noticed that the lock is the same one we examined on the preceding lug door. You may also have noticed it is mounted differently. Instead of drop-in being at 19, it is at 8. I have included these two photographs because there are many of these doors still in use, and it is important to be aware of the mounting variances between the lug and non-lug doors.

Well, that about wraps it up this month. Oh yeah, I did buy a car. Geez, I didn't realize how expensive a set of wheels has become. Can you believe it; my car payment is going to be ten bucks higher than my mortage payment! ■

Let's get down to brass tacks. McOmie's dynamite drill points for these three safes are as follows: on a Herrin-Hall-Marvin fire safe with Yale HE lock, drill straight in from just outside the dial ring at 55. Insert a good quality scope and peek though the gap between the fence and the lockcase. You can see the wheels and the fence. On a single-bolt lug door, drill straight in at 1-3/4" RC, 3/4" up. Insert a good quality scope and peek through the gap in the lockcase. You can see the wheels and the roller fence. On the tri-bolt non-lug door, drill straight in at 1-3/4" up, 3/8" RC. Insert a good quality scope and peek through the gap in the lockcase. You see the wheels and the roller fence.

The Naked Lady Safe

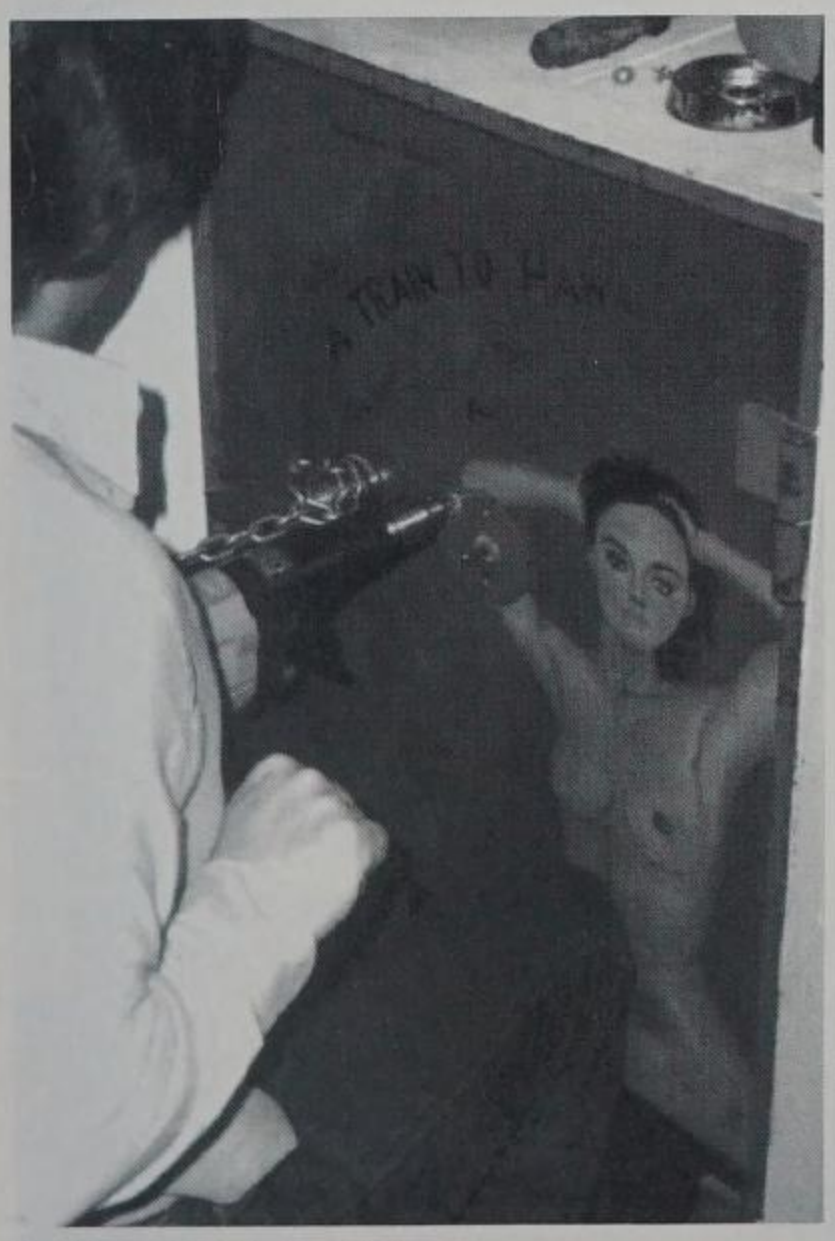
"After I caught my breath, I diverted my gaze and focused my attention on identifying the safe. It was definitely a Mosler. What a beauty!"

by Dave McOmie

Does anyone recognize the object in photograph one? If it will help, the measurements are 48-26-32. Uh-hum, I am talking about the safe, not the girl!

My good buddy, Neal McMahon, from Emergency Locksmith Services in downtown Portland called me on this one. When I pressed him for information, all he would say is "she's a real beauty." I should have known.

After I caught my breath, I diverted my gaze and focused my attention on identifying the safe. It was definitely a Mosler. The streamlined silver handle with the long screw in the end of it; the chrome spyproof dial with the black plastic center; and the fact that dial center to handle center was 4¾", convinced me that this safe had a CD302 lock in it mounted RH.



1. The naked lady safe.

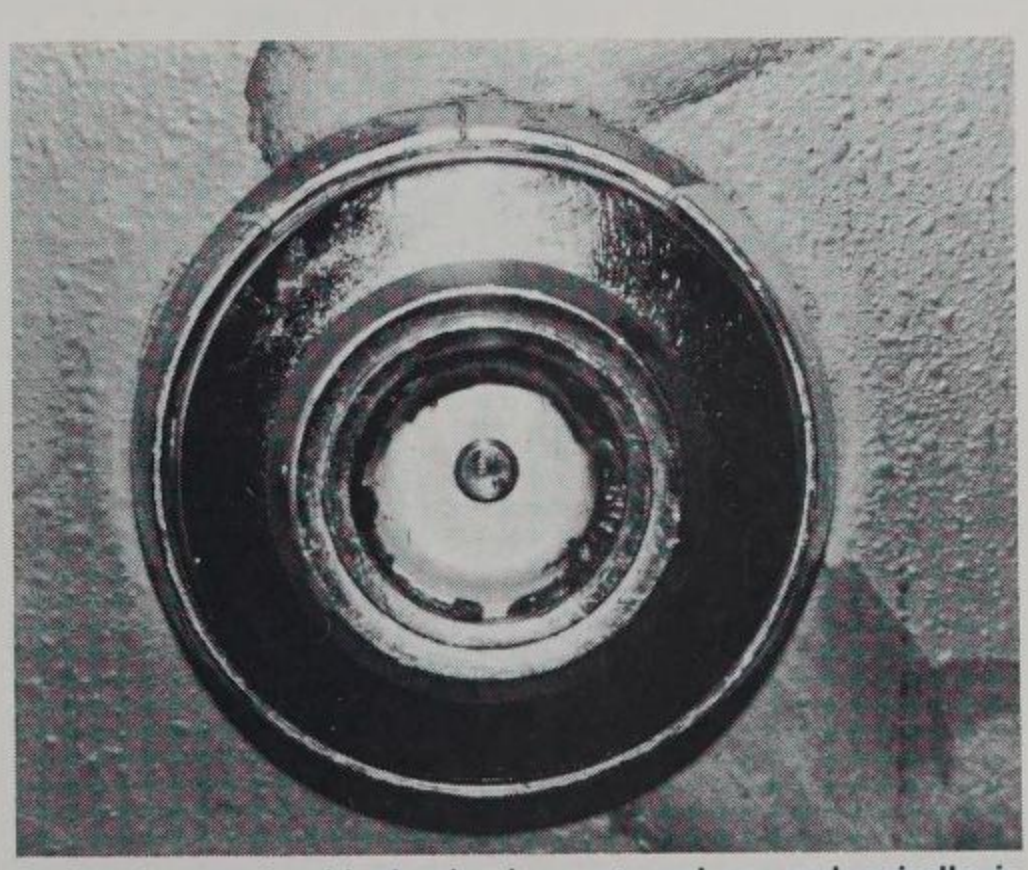
Now that I had identified the safe and its respective lock, the next step was to come up with an opening technique. There were a couple of places I was tempted to drill, but I decided that getting the safe open was more important. There were several options: 1) Manipulation. 2)Drill and punch the handle cam, bypassing the lockbolt. 3) Drill off the shouldered, punchproof portion of the handle arbor, and bypass the lockbolt. 4) Drill in and defeat the combination lock.

Here was my thinking. After going once around the dial and getting nothing, I rejected manipulation as not being time or cost-effective. Now before I get a bunch of hate-mail from you diehard manipulators, let me briefly explain how I work. I love manipulation, and I use it every day, not only to open safes, but also as a diagnostic aid. But, I do not allow its seductive charm to distort my judgment. When I have a stack of jobs to do, time is everything. On a fire safe that can be drilled open in 10 minutes, I give manipulation 5 minutes. If I feel it looks good, I will give it another 10, but that's it. Now it's time to drill.

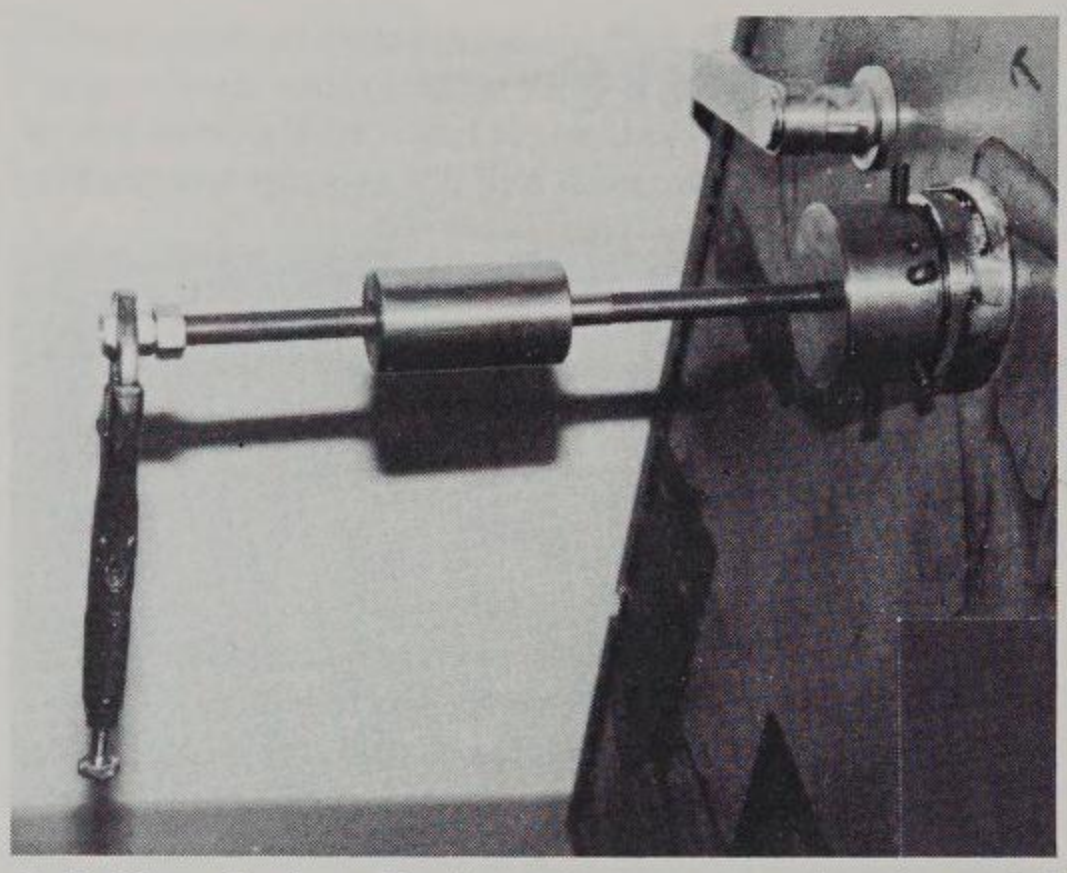
I was a long time acquiring this kind of discipline; but after having had so many workdays disrupted because that little diehard voice kept whispering in my ear, "Come on Dave, you've almost got it," it finally came down to dollars and sense. Understand however, that in situations where I am not under the pressure of a tight schedule, I enjoy kicking back and manipulation, just for the love of the art.

Enough said. Let's get on with the opening, shall we?

Option #2 was rejected because the hole would be outside the dial ring, and the point was not a stock Mosler color (no kidding!). Matching it would have been difficult.



2. Break out the black plastic center piece and spindle is visible.



3. Hold cup firmly and begin turning cap nut on the other end of the shaft.

Option #3 was rejected for lack of a replacement arbor, and also because of an intuitive dislike for the method.

Option #4 was the chosen plan of attack. Drill into and defeat the combination lock itself. The first thing to do was to remove the dial and dial ring. One way to remove Mosler spyproof dials is to use a dial puller and slam them off. This works great on the black plastic dials, but on the chrome dials you run the risk of ruining the lockcase. This is because the chrome dials come off the spindle much harder than the plastic ones do, and all this stress is put on the driver. Each time you bang the slide weight on the puller, the driver is forced against the lockcase, and literally tries to crush its way through. What you often end up with is a badly distorted lockcase. But there is a better way.

I owe this trick to one of my best friends in the business. Don Spenard of Argens Safe and Lock in Seattle.

It works like this: break out the black plastic center piece. You can now see the spindle (*see photograph two*). Insert anything that will fit tight, into the hole on the end of your dial puller shaft. I use a drill bit, and leave it sticking out about ¾" past the end of the shaft. Attach the puller cup to the dial as you would normally, and have the tip of the drill bit almost touching the spindle. Now, instead of banging the slide-weight, just hold the cup firmly in place and begin turning the cap nut on the other end of the shaft (*see photograph three*). The drill bit will bottom out against the spindle, and the cup will gently pull the dial right off the spindle. Slick, eh? It is rumored that replacement black plastic center pieces are only going to be available as separate components for just a while longer, so place your orders with Mosler before it is too late. Thanks for the tip, Don.

The next step is to figure out where to drill. I have two favorite spots to penetrate a 302. One is to go right for the fence and remove it from the lever. This is the only way to go when you are up against a malfunctioning lock.

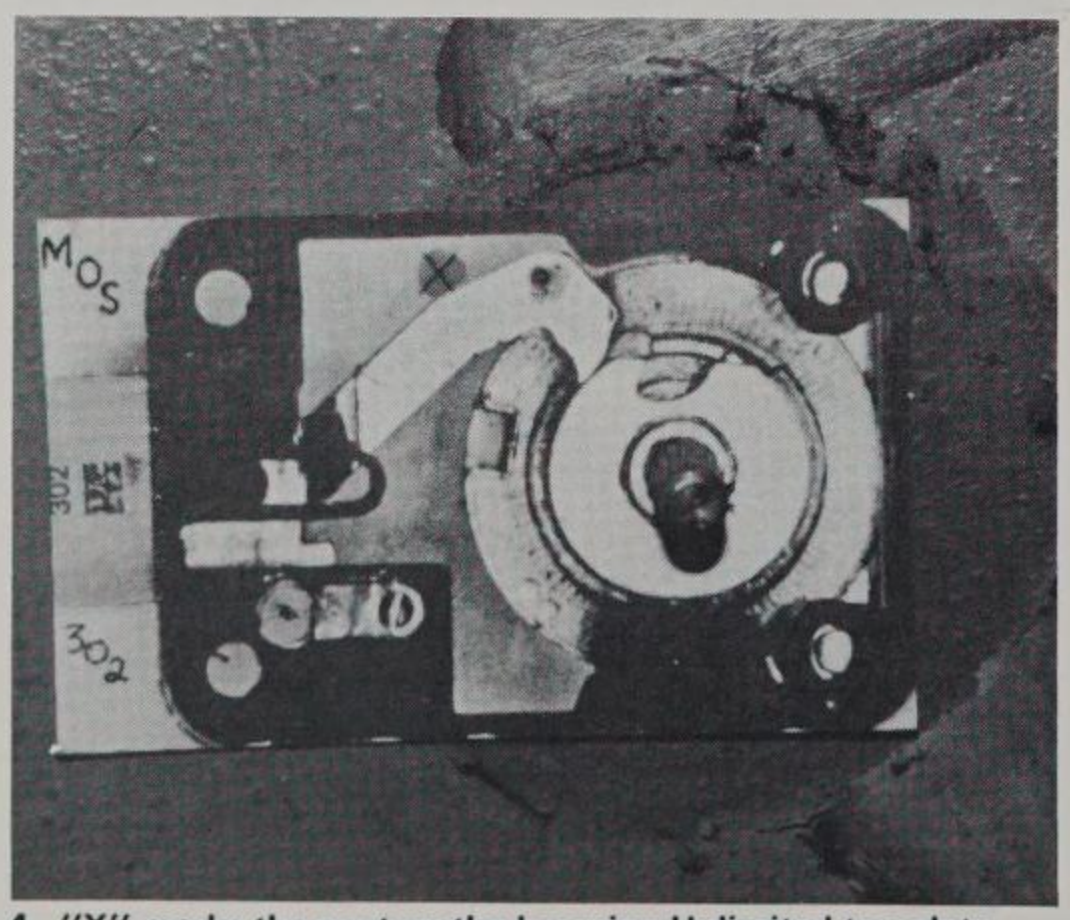
The other technique involves the use of a borescope. The idea is to drill into an open cavity in the lockcase and use a scope to line up the wheel gates. My favorite spot to go this is right above the middle of the lever. At this spot you can actually watch the wheel gates line up right under the fence; no transfer-

5. The Strongarm ¼ × 4 going through hardplate.

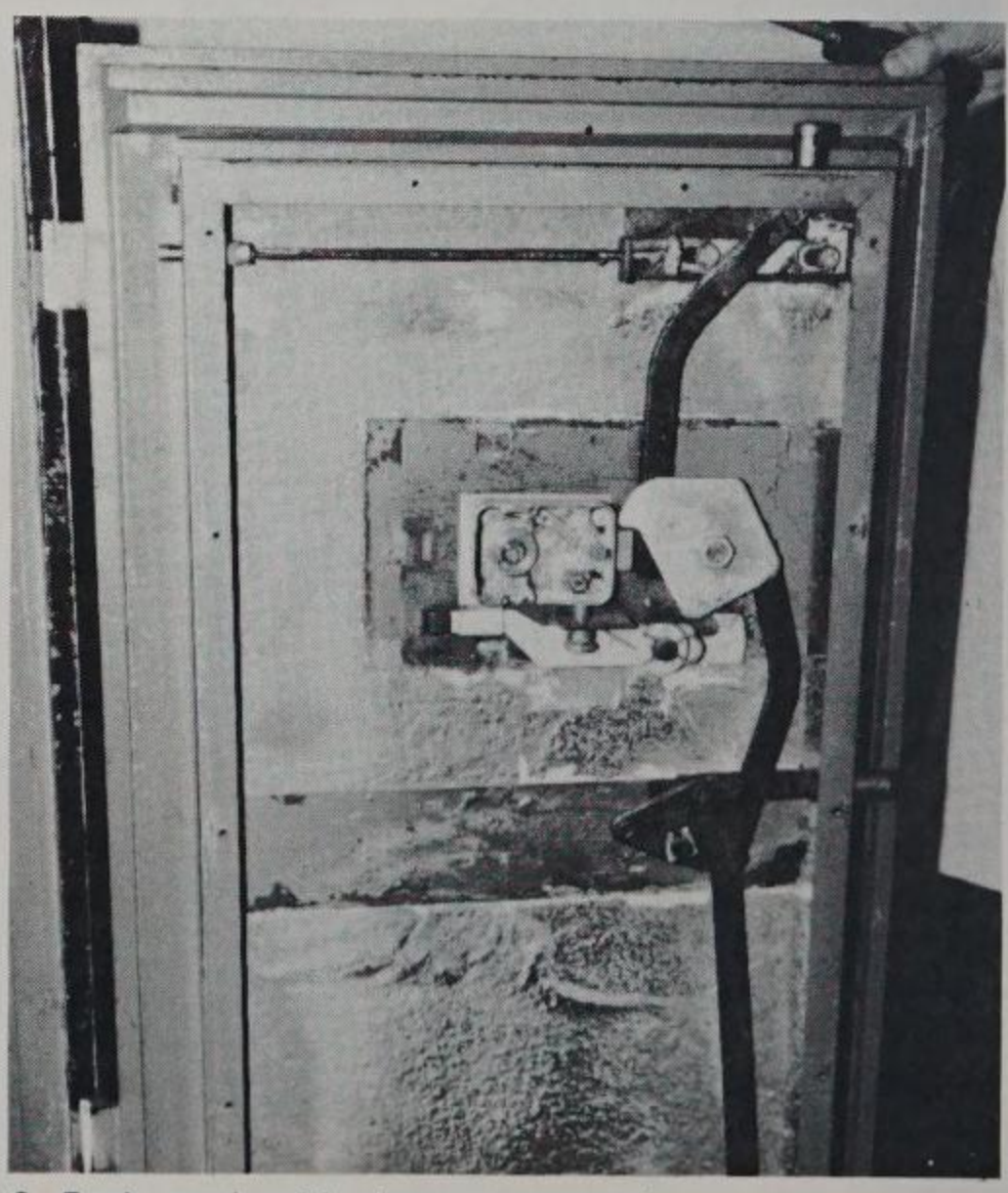
ring is necessary.

In photograph four, I have put in place a Learning Unlimited template, and the X marks the spot. For those of you who don't have these templates, the drill point is 85 × 1½".

In photograph five the Strongarm ¼ × 4 is just about bot-



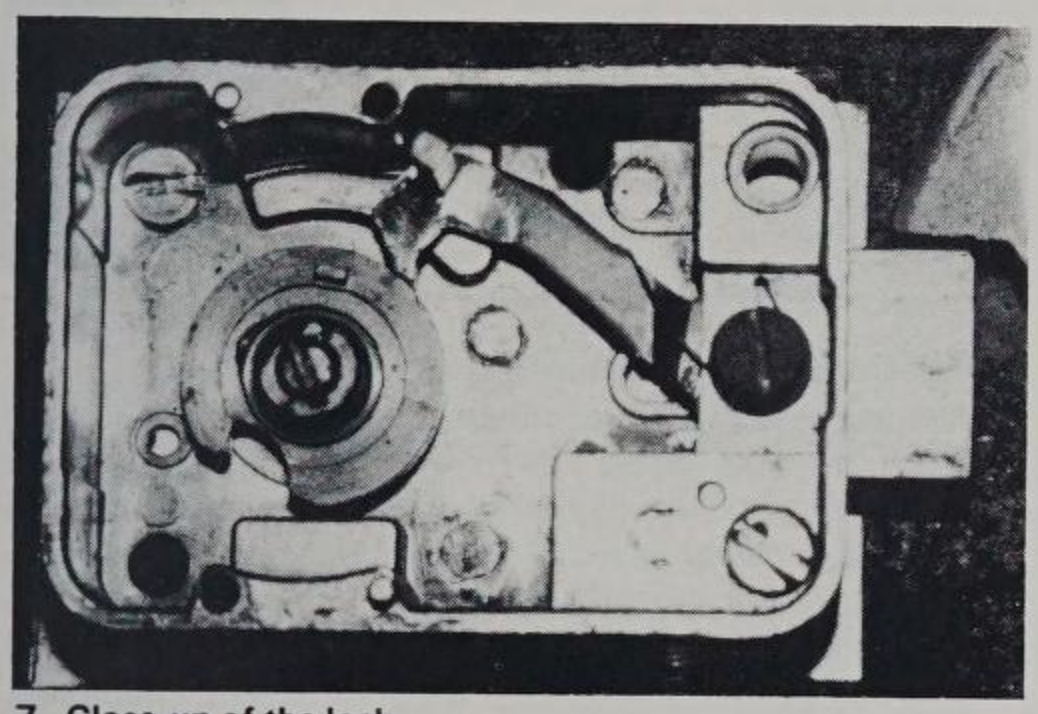
4. "X" marks the spot on the Learning Unlimited template.



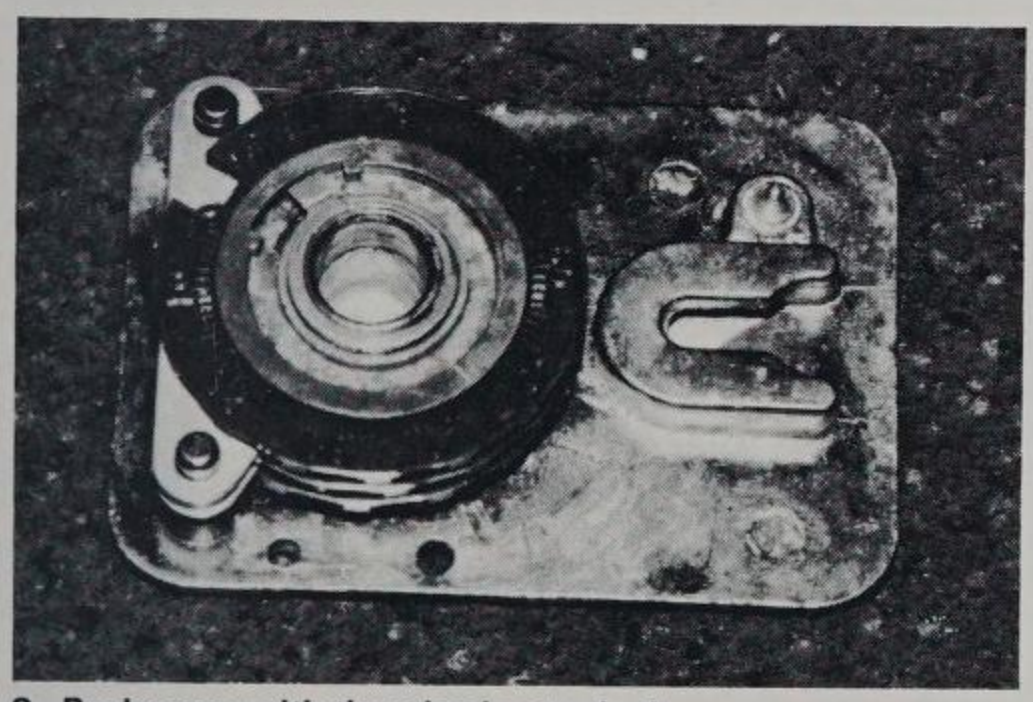
6. Back panel and back cover removed.

tomed out as it goes through the hardplate. After the hole is completed, a scope is inserted and the gates are lined up right under the fence. I watched it drop in, removed the scope, turned the spindle, and threw the handle. The "naked lady" safe was open.

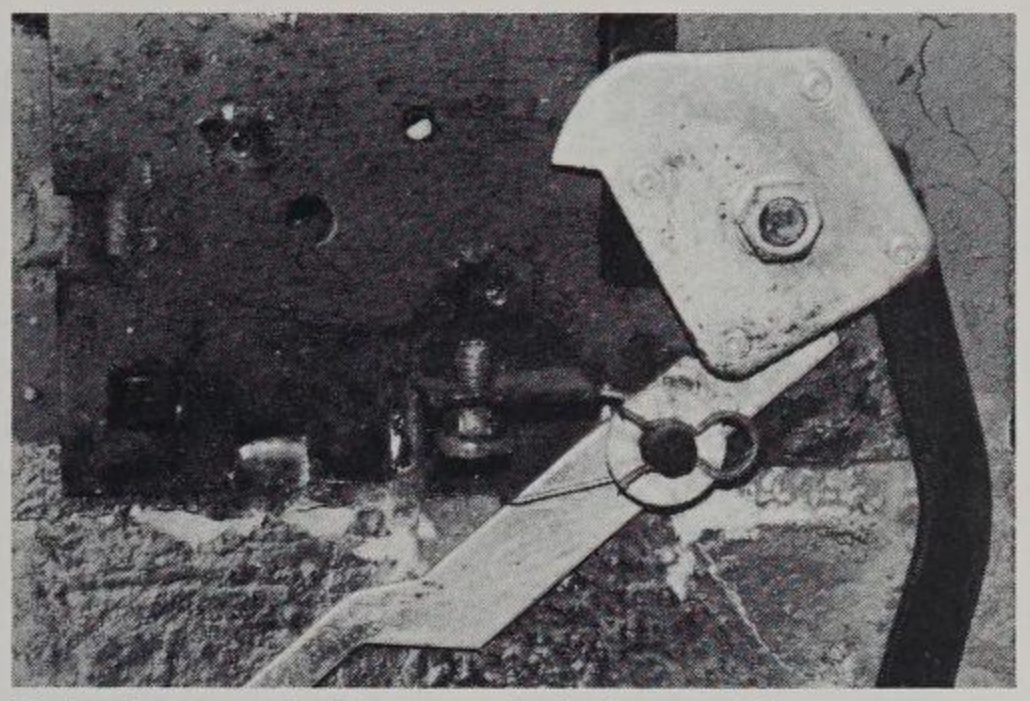
In photograph six, the back panel and the back cover have been removed. As you can see, there are three locking bolts—a top bolt, a bottom bolt, and a side bolt. Notice that the tip of the handle cam butts up against the top of the lockbolt. This is reversed from most other manufacturers, but has long been standard practice for Mosler. The long flat piece below the lock and handle cam is the external relocking device. This is held in check by an arm on the plate that is mounted under the lock. More on this later.



7. Close-up of the lock.



8. Back cover with the wheels attached.



9. Lock removed with external relocker set off.

Photograph seven is a close-up of the lock. The hole that opened the safe is visible just above the middle of the lever. Notice there are only two screws used to mount the lock.

Photograph eight shows the back cover with the wheels at- tached. There are three 1⅞″ Lexan (plastic) hand-change wheels.

In photograph nine, the lock has been removed, along with the relock plate, setting off the external relocker. It is rare that you will ever have one of these safes with the external relocker set off. The whole lockcase has to blow out far enough to let the relocker slip off the holdback arm. I have only seen this happen once, and curiously enough, it turned out to be one of the easier relockers to neutralize that I have ever drilled for. I put a ¼″ hole, 3″ LC, and 3¼″ down. This missed the hardplate. I just made a little fan in the insulation, found the relocker and raised it up. Teeter-totter style, this lowered the other end of the relocker and freed the handle cam. A real piece of...whoops! I vowed never to say that again, didn't I?

By the way, Neal thinks our little lady resembles Vanna White. I say she is a cross between Joan Collins and Jacqueline Bisset. What do you think?

Working On La Gard Boltworks

"When I ran into this boltwork system it tickled me pink. I had been waiting for over a year to open one of the doors that have the ball bearing packed hardplate."

by Dave McOmie

It is getting more and more difficult to tell safe manufacturers apart. Quite often, the "manufacturer" isn't even the actual manufacturer, if you know what I mean. Take fire resistive safes, for example. We have seen the flood of inexpensive imports, which come from a very small number of overseas manufacturers, yet they end up with dozens of names on them, such as Adesco, Amsec, Crown, Diplomat, Kingtron, Major, Maximum, McGunn, Oregard, Safeguard, Wilson, and others. After you have taken a few of these apart, you will notice that many of them are virtually identical. At this point, it becomes easier to make identification by physical characteristics, rather than relying solely on the nameplate.

As we turn to square and rectangular door money safes, the situation is both similar and different. Similar in that identification can be a little tricky; once again, you can pull the back off many different manufacturers' safes and find them to be virtually identical. Different in that the situation is not due to a high incidence of "private labeled" imports.

Very few of the Amercan companies that actually manufacture their own safes are importing money safes. But many of them have been able to simplify the manufacturing process and cut costs by turning to the innovative people at 3330 Kashiwa Street, Torrance, CA. This of course, is the home of La Gard Inc. La Gard not only has an impressive line of combination locks, key locks and time locks, but also produces their own round doors, and has several different boltwork systems available for square door safes. Dozens of manufacturers worldwide are using these boltwork systems, and this is where identification may seem confusing at first. However, to my way of thinking, this actually simplifies identification. Once you learn to recognize a La Gard "system," what difference does it make whose name is on the safe? Well, it does matter in some instances, but the point is, that as more and more manufacturers begin using La Gard boltwork systems, identifying the lock and boltwork arrangement will become easier, not harder.

This brings me to the subject of this month's article. Late one morning last month, I got a call from a locksmith in Longview, Washington to open a safe as soon as possible. So I finished the one I was working on, grabbed some lunch, and headed north.

Upon arrival, I was escorted to the safe shown in photograph

1. U.S. Security safe with La Gard boltwork.

one. As you can see, it sports labels from Bridgeman and U.S. Security Safe. My guess is that U.S. Security made the unit and delivered it to Bridgeman for resale.

I recognized it immediately as having a La Gard boltwork system, and using the position of the dial in relation to the edge of the door, I ascertained that we were dealing with a two-bolt door (as opposed to the 4-bolt door which we will examine later in the article). This tickled me pink because I had been patiently waiting for over a year to open one of these two-bolt doors that have the hardplate with all of the little ball-bearings in it.

The symptoms were that the combination could be dialed and the fence would drop-in, but the lockbolt would not retract. This door has an external relocking device on the boltwork, and there is also an internal relocker inside the lockcase of the 3330 RL. One or both of these buggers had gone off, but which one?

Itching to tackle the ball-bearing packed hardplate, I opted to

go for the internal relocker. I fired up my Hornet, drilled a 17/64″ hole through the mild steel, and demolished a couple of cheap ¼″ masonary bits, with no noticable progress. So the hole was enlarged to 25/64″. This allowed me to pull one of the ball-bearings out. I then rammed a couple of ⅜″ masonary bits down its throat. Next I switched to a ¼″ Strongarm bit, found a nice little pocket off to the side of the hole where there was now a sizable gap between bearings, and had no trouble penetrating into the lock. But other than finding out that I could go through the hardplate in about 15 minutes (which is the longest penetration time I can recall having on any B rate safe) it accomplished absolutely nothing. The back cover was on tight, and I could see that the internal relocker was not blocking the lockbolt.

This perplexed me. If the back cover was on tight, how could either one of the relockers have gone off? I didn't know, but saw no alternative but to go for the external relocking device on the boltwork. The only problem was that I had no drill point. What? Me, the photographing, measurement-taking fanatic, with no drill point? These days, it is a rare occasion for this to happen, but in this particular case there was a reason, which we will get into shortly.

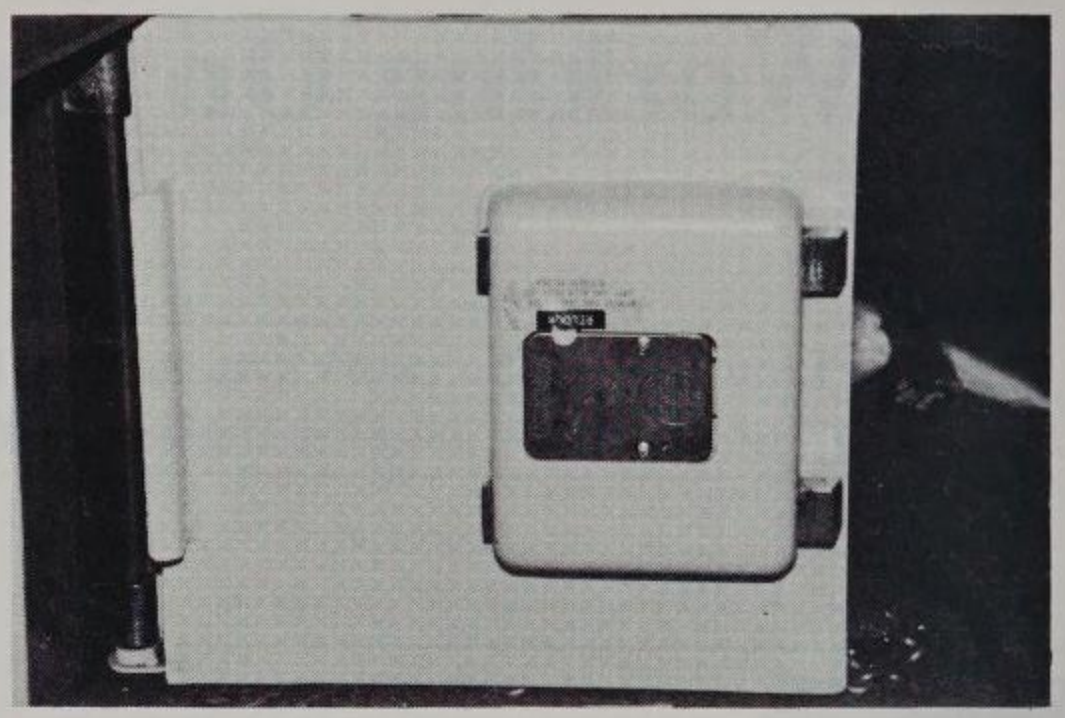
So what did I do? I guessed of course! I put a hole right in the general area where the little tab is. Looking in, it turned out that I was right on the upper locking bolt. Trying to pry it back was not working, so I shoved a scope in the hole and looked around. Sure enough, a little to the right of where I was, I could clearly see the relocker sticking up into a slot in the locking bolt. Using a bent wire as a ruler, I took a measurement from the present hole over to the relocker, and drilled hole number three. It was perfect. I pried the relocker down and out of the slot, and retracted the bolts. The safe was open.

Photograph two shows the holes. The three smallest holes attach the dial ring/handle to the door. The hole in the center is for the spindle. The big hole to the left went into the lock. The big hole at the top of the photo was my guess hole, and the smaller one to the right nailed the relocker dead center.

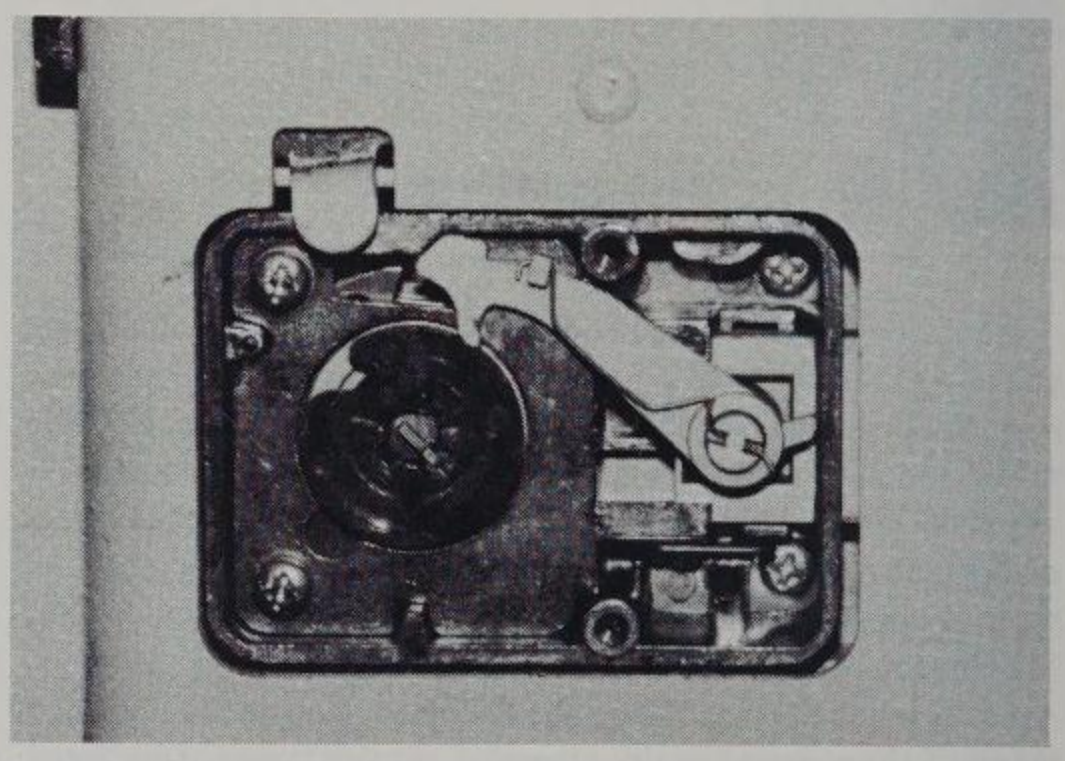
2. Holes drilled to open safe.

Photograph three shows the inside of the door. The little stick-on aluminum decal was still there, hanging off to one side, so I stuck it back on for the sake of this photo. The little plastic piece that goes under the decal and holds the relocker in check during shipping was gone. Whoever took the plastic piece out might as well have removed the decal too, because all it does is hold the plastic piece in place. The decal reads, "RELOCK: Remove this label after the safe has been installed to activate relock."

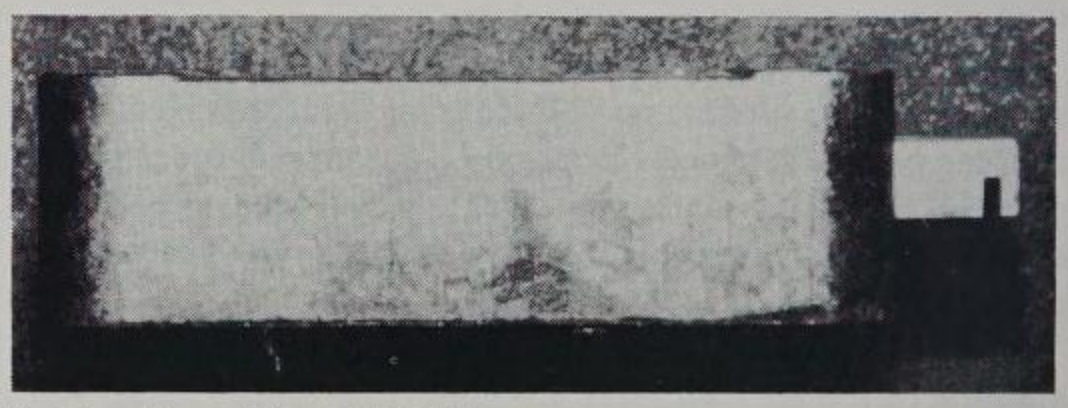
In photograph four we have a closer look with the back cover removed. Notice the little tab hanging down over the lock. This is part of the external relocking device. The whole thing is about three inches long. It is attached to the door pan with a rivet. When the spindle is punched, the back cover breaks away,



3. Inside of door with relock sticker in place.



4. Inside door with back cover removed.



5. Top view of the 3330 RL.

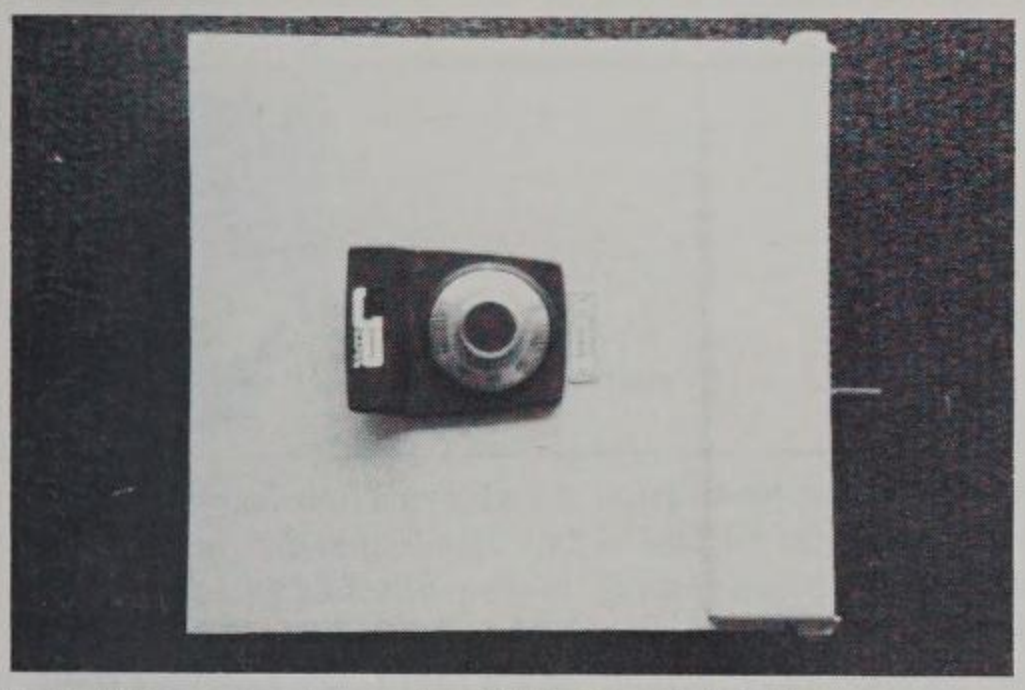
pushing the tab in and then up, which sends the end of the relocker into a cutout on the bottom side of the top locking bolt.

Photograph five is a top view of the 3330 RL that has been modified for use in this door. Notice the slot in the lockbolt. The two locking bolts are connected with a wide piece of sheet metal that has a short 90 degree bend on the end. The bend goes into the slot in the lockbolt and makes the connection from locking bolts to lockbolt. I would show you a photograph of the bolt-work and the relocker, but I can't. The door pan is welded to the door. As a service person, this is a feature that I don't like at all. This is why I had to guess for the relocker. But you won't have to guess. The drill point for this little rascal is 1¼″ RC (to the right of dial center) and 1⅞″ up.

Before we leave this door, I would like to make an appeal to any Einsteins we may have in our reading audience. Answer me this question: How could the external relocking device have possibly gone off all by itself? The back cover was on tight. Gravity works against the relocker; that is to say that the relocker would have to defy gravity in order to raise up and block the locking bolt. Besides that, the relocker is under a considerable amount of friction—it does not slide up and down easily. If anyone has any ideas, please drop me a line. It really

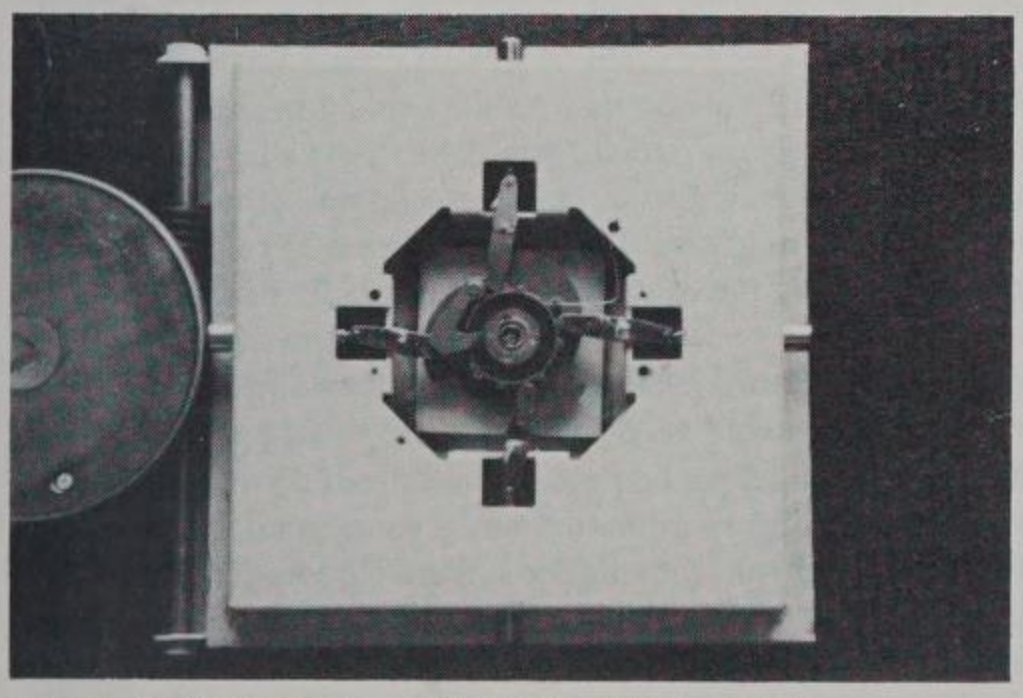
does drive me nuts to open a safe and not be able to figure out the hows and whys of the malfunction.

In photograph six we have another B-rate square door. This one uses La Gard's 4-bolt system. Notice the position of the dial. It is very near the center of the door, as opposed to the 2 bolt door which has the dial much closer to the opening edge of the door. This is the simplest way I have found of distinguishing the two door. (Remember, when you are talking TL-15 and TL-30 containers, that the 2-bolt system is not used. It is only on B and C rated safes that both systems are used, and it is for these safes that this identification technique is intended.)



6. B-Rate square door safe with La Gard's 4-bolt system.

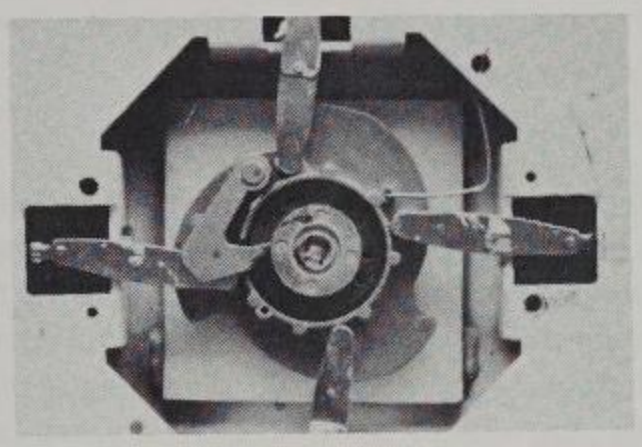
Photograph seven shows the inside of the door with the big, round back plate removed. There are four locking bolts at 3, 6, 9, and 12 o'clock. Drop-in is at 24-25. (When I say "drop-in" I am referring to the point where the fence enters the wheel gates, not the contact area on the dial.) I should point out that this particular door is a Johnson-Pacific (now owned by Meilink). The U.S. Security Safe version of this door (at least those that I have seen), have the lock mounted 180 degrees off from JP/ Meilink, which puts drop-in on their 4-bolt doors at 74-75. This is one instance where identifying the mounting of the lock can be assisted by knowing who the manufacturer is.



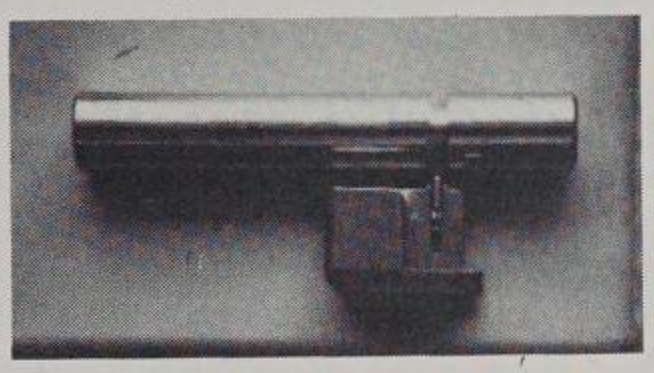
7. Inside of square door with back plate removed.

Photograph eight is a close-up of the lock which is La Gard's 2590. One problem I have had several times with these doors is the mounting screws backing out or stripping out. By the time I arrive, the back plate and the bolt links are laying in the bottom of the safe, which means the relocks must be dealt with and the bolts coaxed back. The old wire-type relocks are fairly easy to beat, but the new ones are more difficult and require drilling.

Photograph nine shows us a locking bolt and a new style



8. Close-up of La Gard's 2501.



9. Locking bolt and new style relocker.

relocker. For your records, each locking bolt has its own relocker, and all those I have measured are 3⅜" out from dial center.

Before signing off this month. I would like to tip my hat to the folks at La Gard. Their products have gained industry-wide respect and they have become a major presence. ■

I never did solve the mystery of the fired relocker. It hasn't happened since and probably never will. Oh well, another unsolved mystery for the archives. One day far in the future, perhaps someone's grandchild will figure it out.

Safe Opening Burns Money

"The mini-lance looked like a perfect solution to do the opening. I have used it before with favorable results, but I had a recent experience you should know about."

by Dave McOmie

Professionalism. These days a much thrown around word that means different things and is held to varying levels of importance by different people. Several months back Marc Goldberg spoke briefly on the subject in his Commentary. Like most everyone else, I read it and thought, yeah yeah, so what else is new. I try to look neat and clean, communicate halfway intelligently, and always try to do the cleanest most professional job that I can. Isn't that enough? For a long time I thought so, but I am presently having second thoughts.

Last week I visited my friend Steve Williams, the San Franciscan Safeman, and let me tell you, the word professional has taken on a whole new meaning. In the past when I have visited and run on jobs with Steve, he looked just about the way I always do, which is to say like a serviceman. Work pants, work shirt, work shoes, and a baseball cap would finish off Steve's attire. Under his arm would be an army-green ammo case/toolbox, and on his belt a Motorola two-way radio. This time, however, it was different. I just about fell over. Work *slacks*, white shirt and a *tie*, spit-shined black shoes, and a tool case specially designed with a pocket to house his *cellular phone*. As we went on calls I had the chance to observe customer response, and in a word, let me say that it was with respect. I was impressed to the point where I am thinking of doing a make-over on myself. Just thinking mind you, but nevertheless, this old dog might just change his ways.

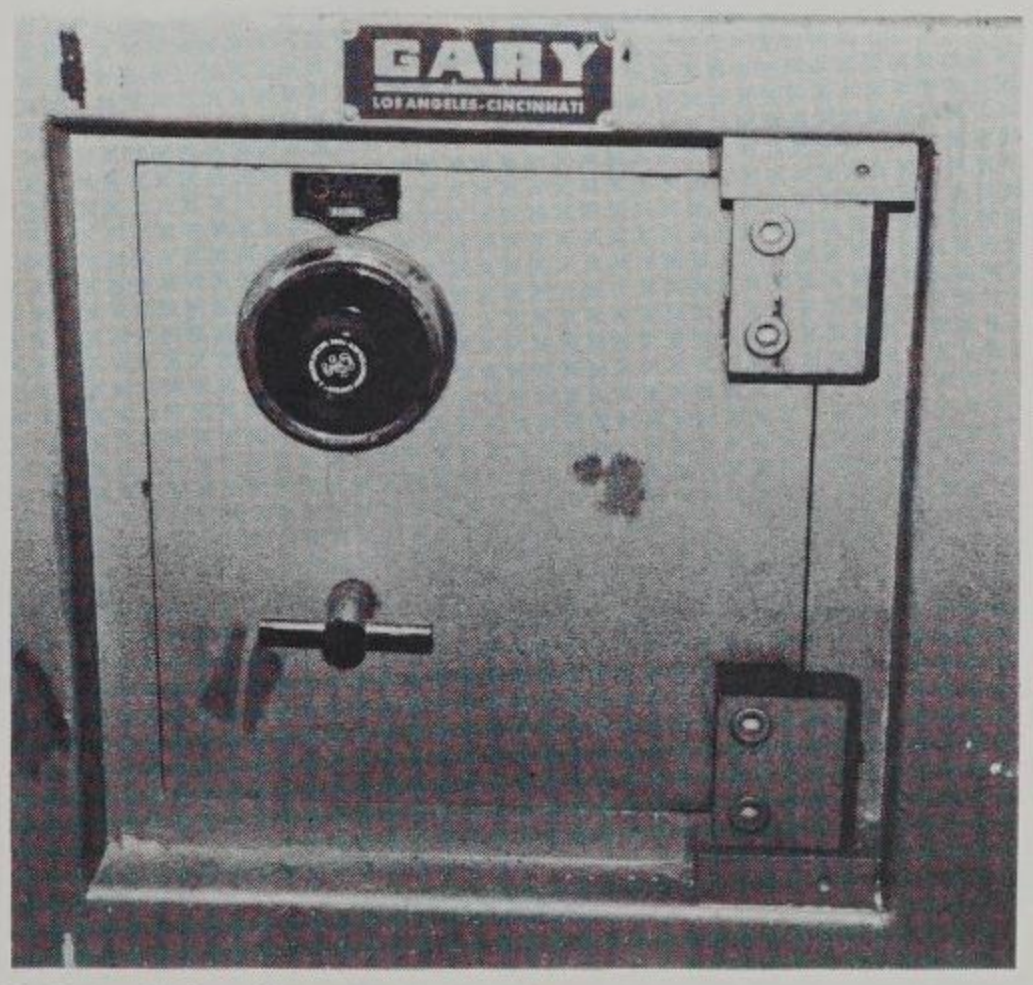
Another important aspect of professionalism, one to which I have always paid a lot of attention, is having the tools and equipment to do the job as quickly and professionally as possible. One of these tools is the miniature burning bar, or mini-lance as many people call it. I bought mine a year ago, primarily to use on Relsom and Maxalloy. I have drilled through enough of these carbide-included hard-plates to have confidence that I can drill through *anything*, but I wanted a time-saver. Let me explain.

In the Northwest, there are probably as many Gary square doors in use as all other manufacturers units combined. This is because Allied Safe & Vault (the largest manufacturer/dealer in the NW, with offices in Seattle, Portland and Spokane), had a semi-exclusive deal with Gary for many years before they purchased Gary in the early 1980s. What all of this means is that I find myself squared off against Gary safes more often than I really care to.

All of us know that a very high percentage of Gary square doors have Maxalloy in them, and none of us has found a quick and easy way to drill through the stuff. There are lots of things you have to watch for. Don't get carried away punching, you may set the relock off. Using a roto-hammer may do the same thing, or it might cause all the screws to come loose. In my experience, using a fixed drill rig, junker bits, and low-speed was the only practical, problem-free method of penetrating the Maxalloy in a Gary square door. But it is time-consuming.

The mini-lance looked like the perfect solution. I used it on several large Gary's with favorable results, but recently I used it on a single-bolt which everyone in our industry should be made aware of. Here is what happened.

I was called out late in the evening to a large supermarket to open the Gary safe shown in photograph one. I identified it at once as a single-bolt door.

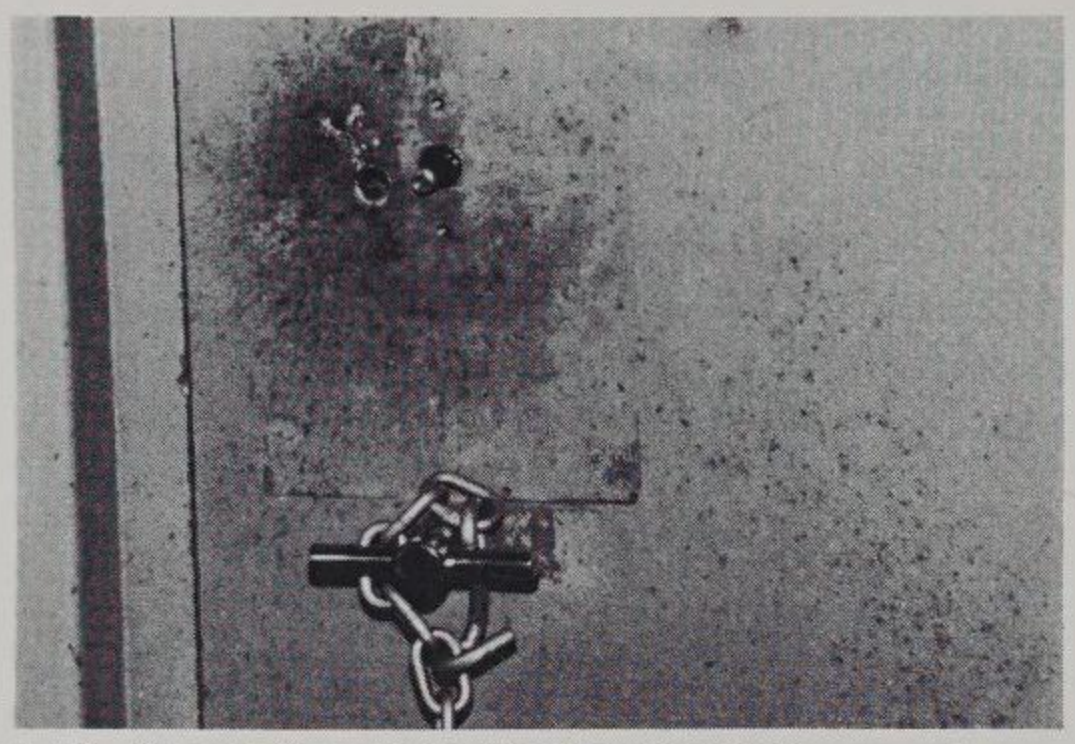


1. Gary Safe with a single-bolt door.

I spun the dial and felt nothing. Putting on my contact amplifier verified my suspicion. Nothing was picking up. So I jerked the dial off, put a hole down to the hardplate and peeked in. Sure enough, it was Mr. Maxalloy staring me down.

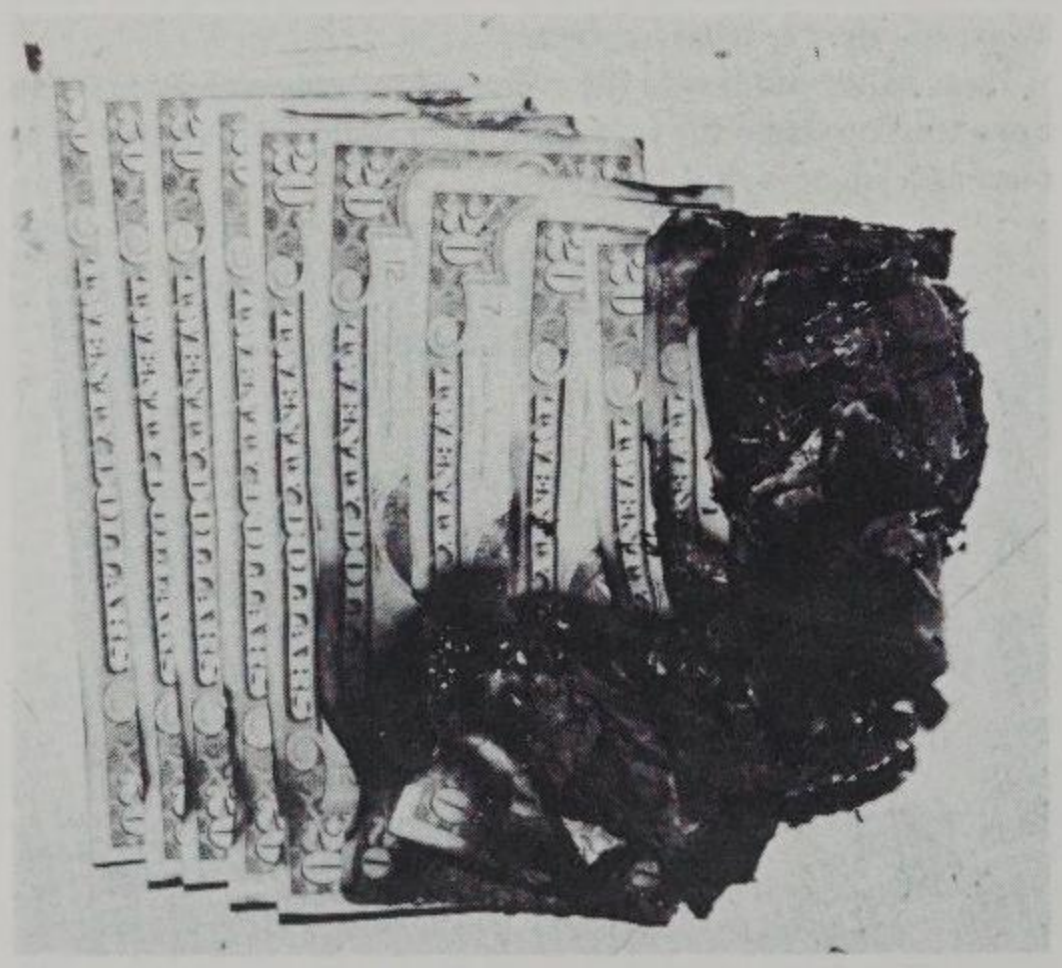
The store people were in a hurry, I was tired, and was not in the mood to listen to all the dumb comments everyone just has to make, so I went out and got my mini-lance. I cordoned off the area around the safe and fired her up. This shut everyone up. As fast as you can say snap-crackle-pop, I had a ¼" hole through the Maxalloy. Photograph two was taken at this point. Using a high-speed bit, I drilled through the mounting plate and into the lock. Peering in the hole, I was looking at the body of the lever. Aha! A Federal Lock—no wonder there was a problem.

I chucked in a 5/32" bit, drilled the fence off, turned the



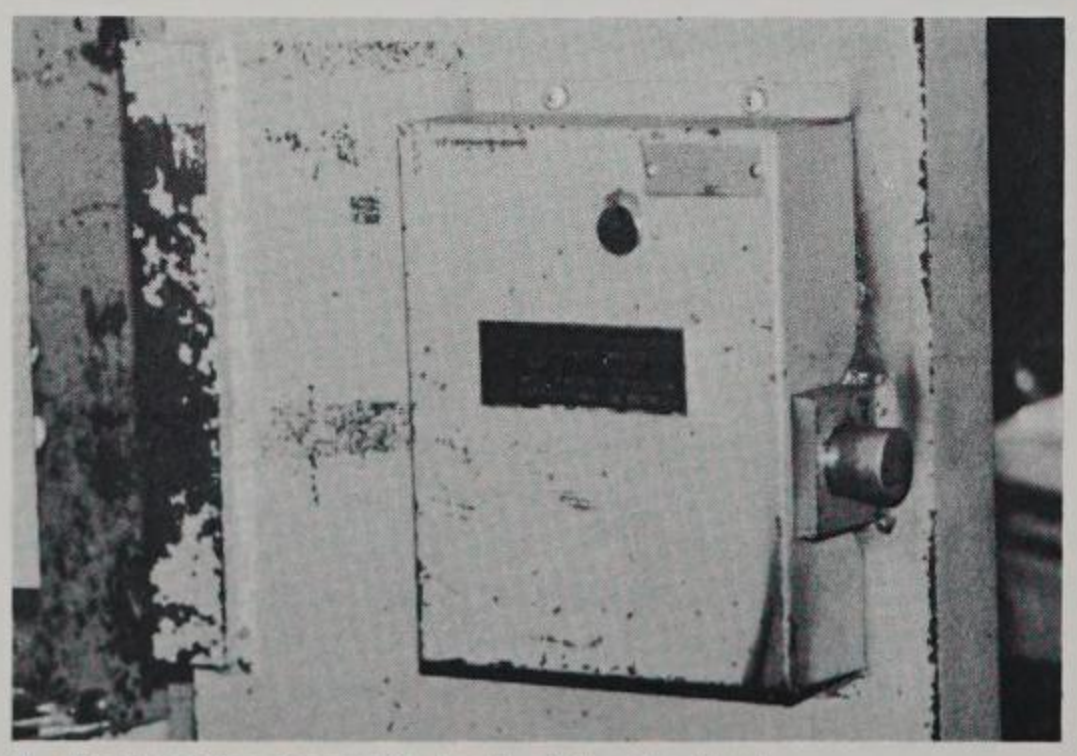
2. The ¼" hole through the Maxalloy the mini-lance made.

spindle, and was congratulating myself on a job well done as I opened the door. Glancing inside, my heart nearly stopped. I was looking at a stack of toasted twenties! (*See photograph 3.*) I thought to myself, this is not possible. I didn't blast on through the lock with the burning bar; how could this have happened? The answer in a moment.



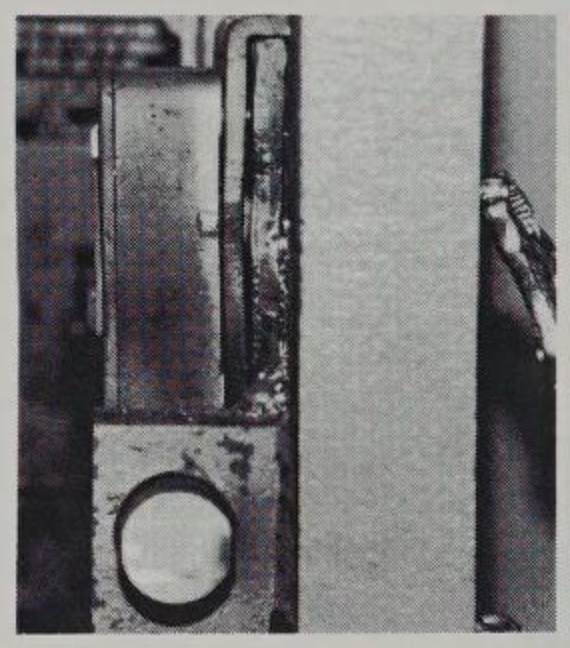
3. Burned bills found inside the safe.

Photograph four shows the back of the door with the back plate still attached.



4. Back of the door with back plate attached.

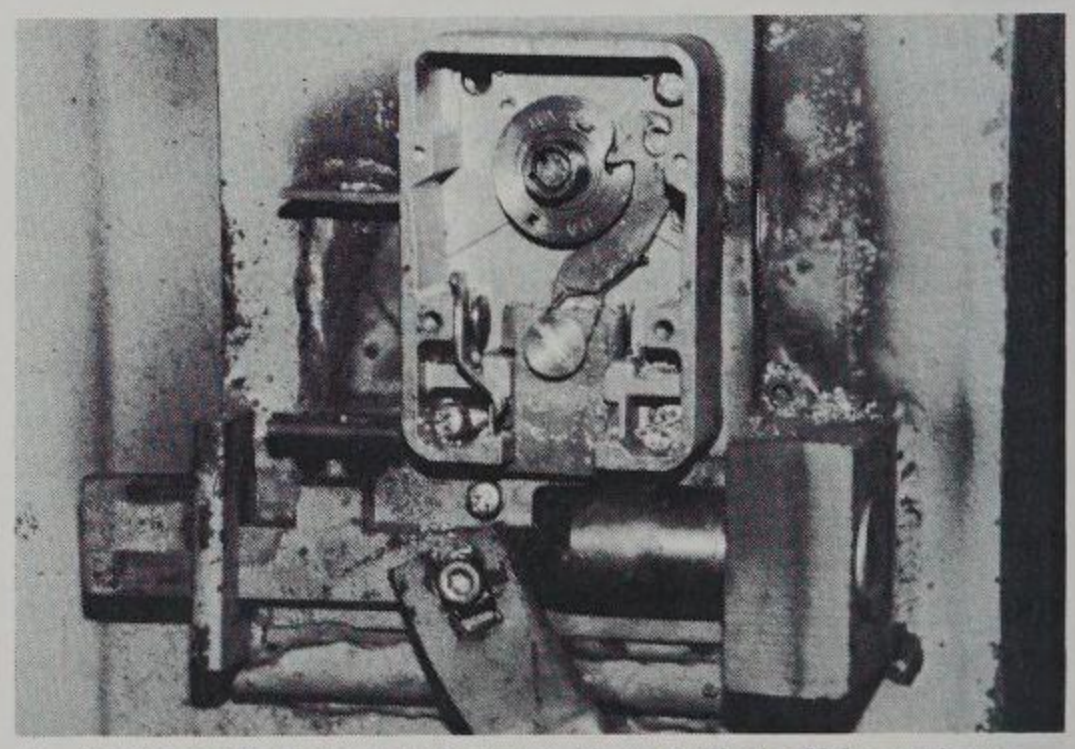
With the back plate removed, the side-view in photograph five gives us the answer: the air-gap. This is something I have always known of, but never really thought much about. That is, until now.



5. Side view with back plate removed, showing the air gap.

A lance gives off a tremendous amount of sparks. In this case the sparks flew out the air gap between the door and the hardplate, traveled along the back plate, escaped, hit the wall and bounced in on top of the money. There was $20,000 in the safe, but the bank exchanged all but six of the damaged bills. I was very lucky.

Photograph six shows the lock and boltwork in the unlocked position. If you look closely, you can see where I drilled the fence off the lever.



6. Lock and boltwork unlocked. Note drilled off fence lever.

Based on my limited experience with the mini-lance, my analysis is that we all had better pay closer attention to the construction of safes. "Is there an air-gap?" is probably the single most important question.

The larger Gary square doors (16" and higher), have an air-gap, but the lock sits on the other side of the hardplate. This means that a hole for the fence will be near the center of the plate, instead of near the edge, as on smaller single-bolt door.

Also, the larger doors have much larger back plates, which means that sparks would have a whole lot farther to travel to cause trouble. In my opinion, based once again on limited experience, it is relatively safe to use the lance on a larger square door, but I certainly would recommend not using it on the single-bolt doors.

At this point I am going to do some serious testing with diamond bits to see if they really are time and cost-effective. Concerning professionalism, I must say that even a white shirt and black tie wouldn't have wiped off all the egg I had on my face that night. I hope y'all can learn from my experience and not make the same mistake. You might not be so lucky. ■

This was a valuable lesson. I learned not to use the lance on a safe with an airgap between the hardplate and door. (Just between us, I will confess to not using a lance on the job since this fateful and frightening day. Truth be told, the toasted $20's scared the crapola right out of me.)

Montana Safe Seminar, Part I

"Jim rounded up a roomful of locked safes and a dozen attendees; I loaded up my tools and headed for Missoula, Montana...the Big Sky Country."

by Dave McOmie

Three or four years ago, country singer Merle Haggard had a number one hit with the title song of his "Big City" album. The first line of the chorus goes, "Turn me loose, set me free, somewhere in the middle of Montana." The song was and is a favorite of folks who like to two-step, and it hit a nerve in many of us who spend our lives in and around large metropolitan areas, harboring a secret yearning for the great outdoors. Recently I had the opportunity to visit Big Sky Country, and I had a great time. Here is how it happened...

While I was out of state opening a safe, my business phone back home received a call to open an imported high-security safe somewhere in the middle of Montana. As it turned out, the caller was able to finesse the safe open, so I waited until I got home to return the call.

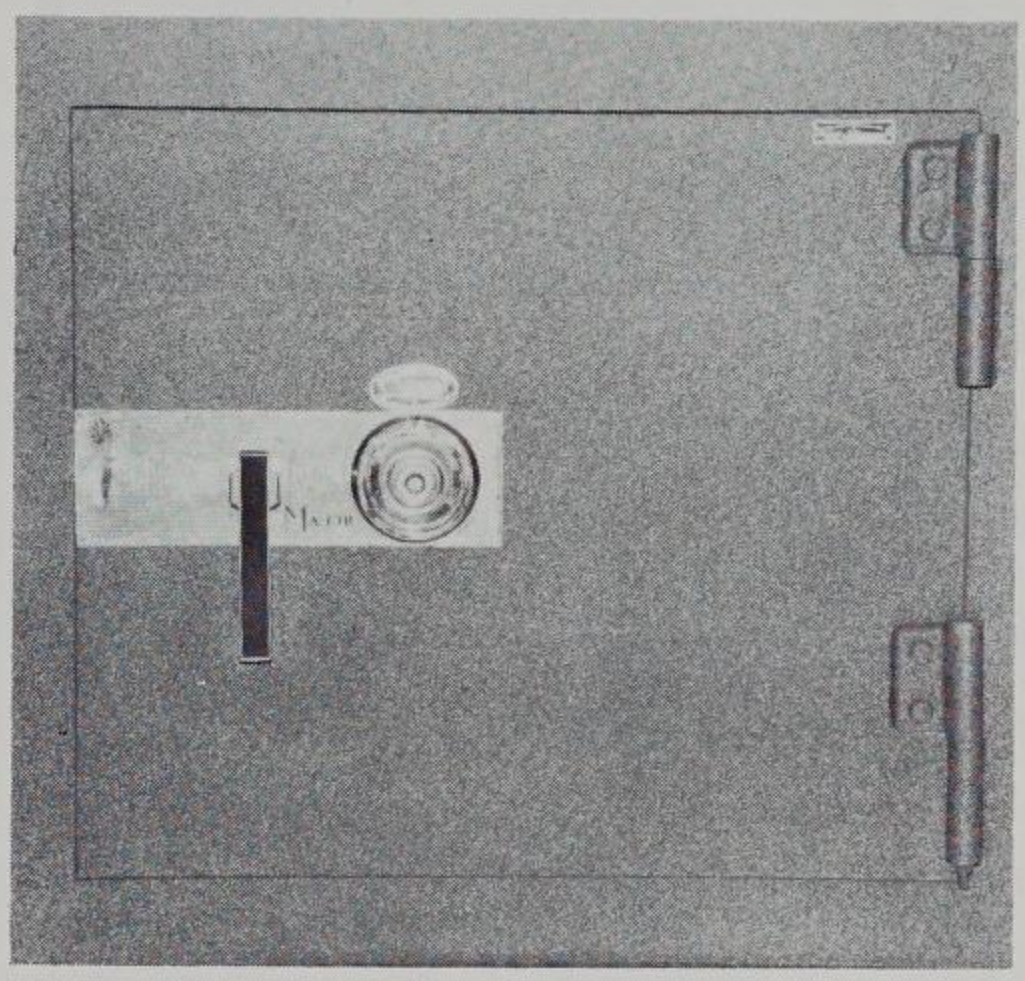
It was ALOA Director James Watt, from Art & Ray's Lock Shop in Missoula. My services weren't needed on the import, but one thing led to another, and before we got off the phone a date had been set for a safe opening seminar. Jim rounded up a roomful of locked safes and a dozen attendees; I loaded up my tools and headed for Missoula.

Just after dinner, I cruised into town, and Jim escorted me to the shop to see what we were up against. Mr. Watt had indeed gathered together an impressive array of sparring partners for us to beat up on. Lined up against the wall with their dukes up, were a Major square door, a Major round door, a Star lug door, a Herring-Hall-Marvin lug door, two Gary square doors, a Victor fire safe, and an old Army field safe. Being familiar with all the opponents, it looked to me like another routine seminar. I was wrong.

The following morning, over coffee and doughnuts, I met and chatted with most of the locksmiths that practice in the state of Montana, and I have to say that a nicer, more pleasant bunch of guys I have never met. It was tempting to turn this into an all day coffee-break, but time was slipping away so we got to work.

With video cameras and volunteer operator in position, I singled out the C rate Major square door shown in photograph one to be our first victim. In short order I drilled and tapped the dial off the spindle, and with the aid of a Learning Unlimited template the drill point was marked right at the fence.

Using an ⅛" bit, on the off-chance that there might not be any hardplate, I penetrated through the door and right on into the



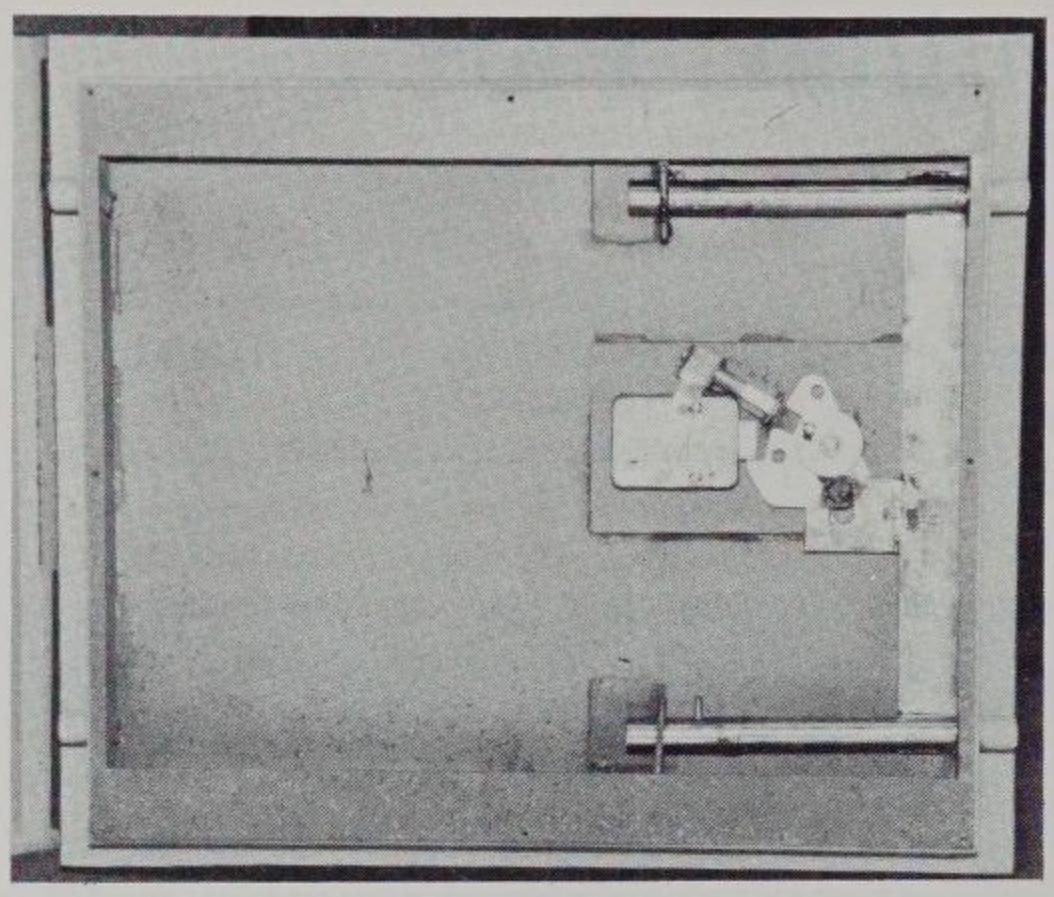
1. C rate Major square door safe.

lockcase. No hardplate! With visions of pulling off a 3-minute opening, on videotape no less, I peeked in the hole. It was a hair too high, and the wheels were not quite visible. Darn! I sorted through my drill bits looking for a ¼" high speed bit to enlarge the hole, but couldn't find one.

With the tape rolling, I did not want to walk off camera to fetch my drill bit box, so I did a no-no. I grabbed a razor-sharp carbide tipped bit and began enlarging the hole. You can probably guess what happened. About half way through the door, the bit grabbed and snap! Off went the carbide tip. Doing my best to act nonchalant, I grabbed my light and my ice pick to see if the tip might be loose enough to pull out with my little magnet. No luck, it was wedged in there real good.

A little red-faced, but with my sense of humor intact, I turned to the guys and said, "Well gentlemen, the door that had no hardplate in it a few seconds ago now has a nice chunk of carbide right in the way!" We had a good chuckle over that one.

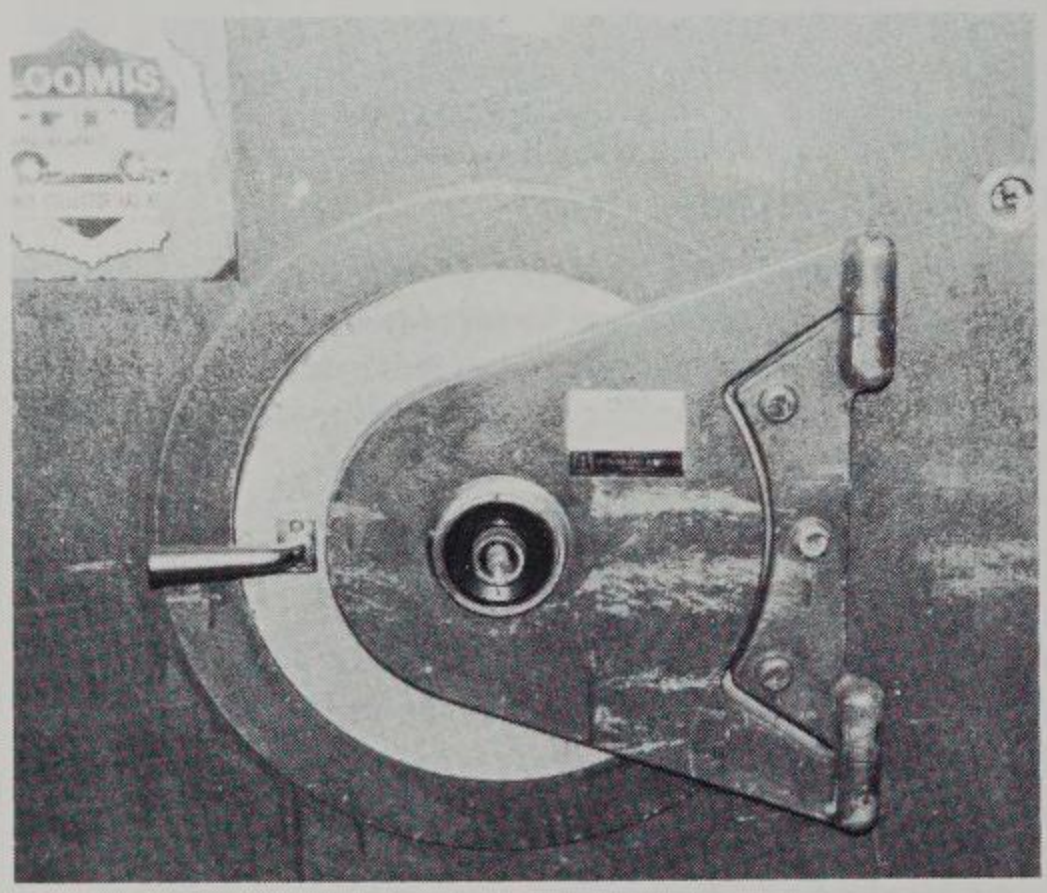
Using a center punch, a hammer, and a magnet, it took a minute or two to get the tip out of the way. This time around I took the extra ten seconds to go off camera and get the right drill bit. After enlarging the hole, the safe was opened quickly, and in photograph two the back panel has been removed for your inspection. The S&G R6730 lock is mounted RH, and the familiar looking external relocker is ready to spring headfirst in to the handle cam if the back cover is disturbed. Those of you familiar with these safes may notice the absence of the handle activated relocker that is found on the old-style TL-15 doors. Theoretically, these C rate doors can be beat via the arbor, but being one that looks for an easy repair, I will choose to go for



2. Opened safe with back panel removed.

the lock every time. Besides, who wants to stock more parts than necessary?

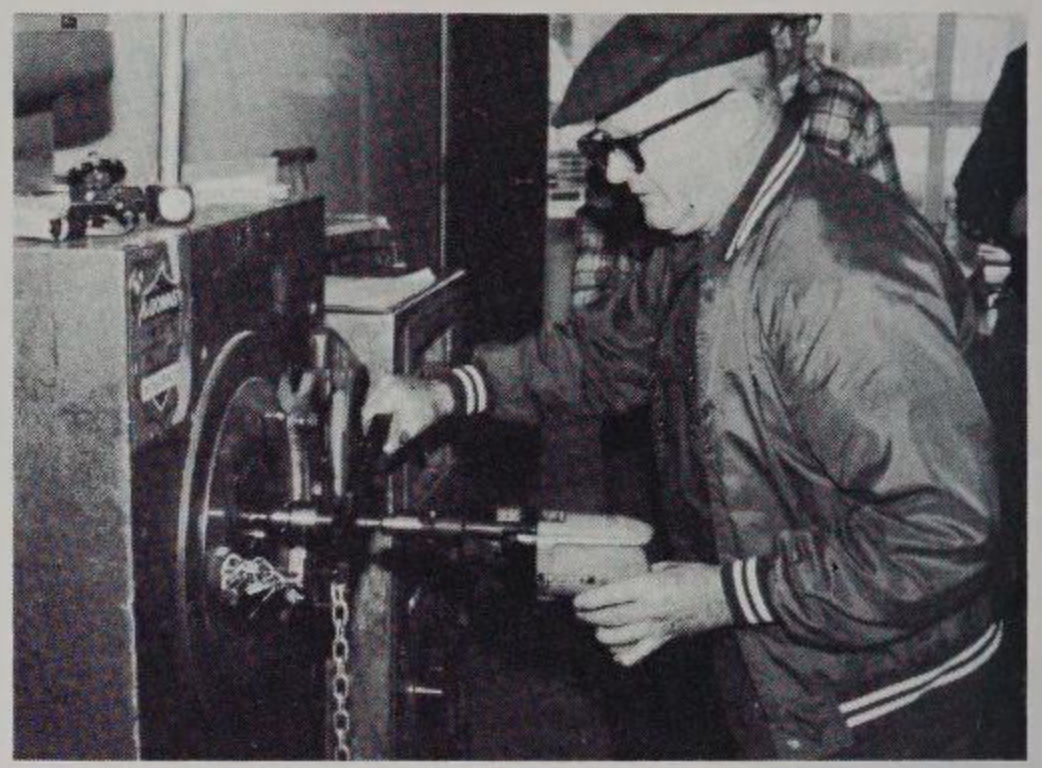
Next up was the Star lug door in photograph three. To my knowledge, Star only mass produced two types of lug doors: the single bolt door and the tri-bolt door. The tri-bolt doors came with a push-in dial manipulation resistant lock, and carried serial numbers higher than 15,943. The door at hand, not having a push-in dial, and carrying a serial number well under



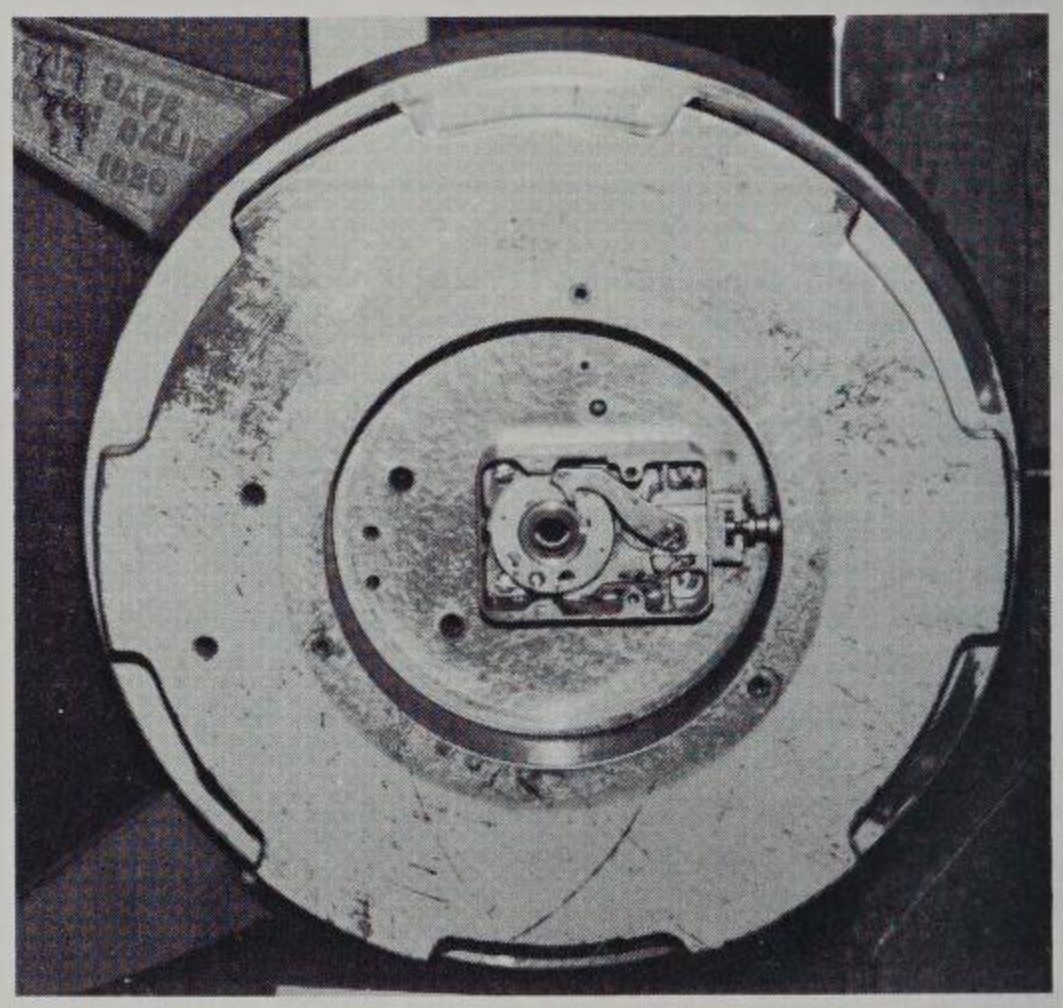
3. Star lug door safe.

15,943, identified itself to us as an old style TL-15 single bolt lug door. I pulled the dial, backed out the bearing plate screws, and gave everybody fair warning to watch for bouncing ball bearings when we swung the crane hinge away from the door. It wasn't too bad; one of the guys caught most of the giant BB's with a box.

I marked the drill point, put a dimple in the case-hardened door, and turned Jack Haven from Haven's Lock & Safe in Helena loose. In photograph four Jack is showing us perfect form as he penetrates the hardplate. His hole was right on the money, and the safe was open in a flash. In photograph five we have a rear view with the back plate and back cover removed.

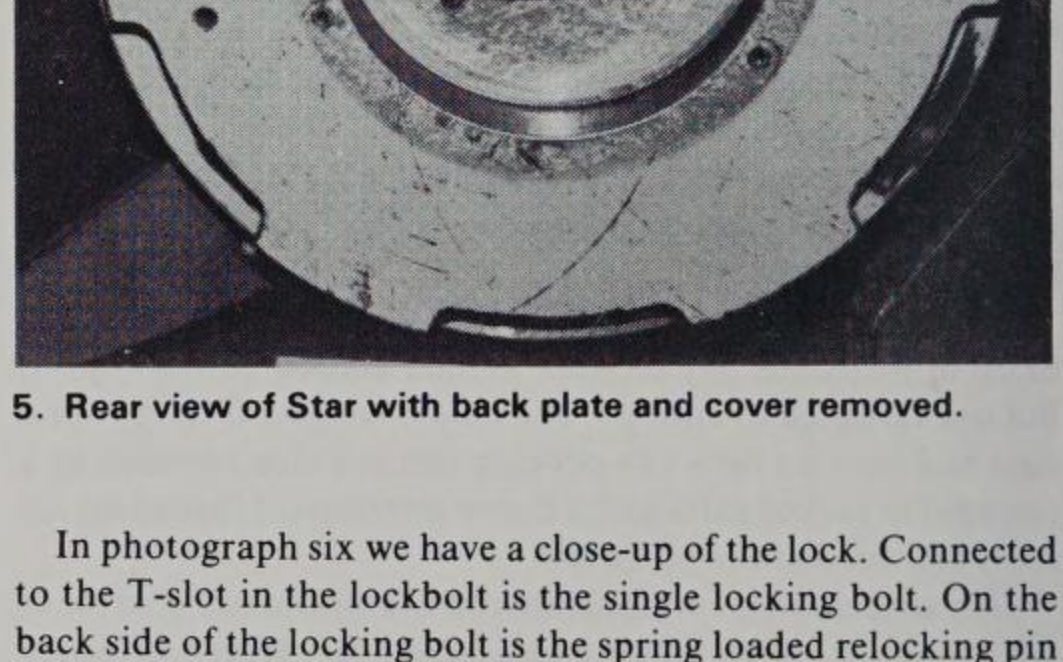


4. Jack Haven penetrates the hardplate.



5. Rear view of Star with back plate and cover removed.

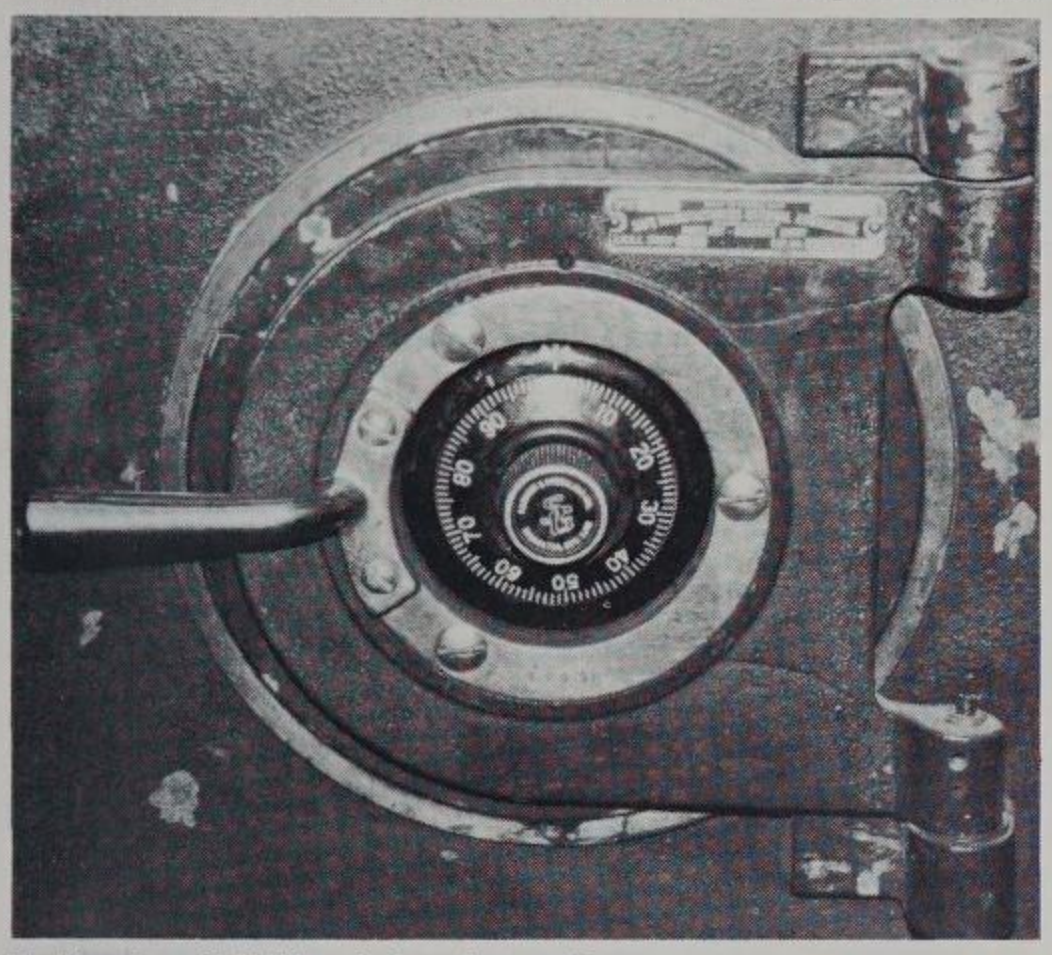
In photograph six we have a close-up of the lock. Connected to the T-slot in the lockbolt is the single locking bolt. On the back side of the locking bolt is the spring loaded relocking pin



6. Close-up showing the single locking bolt connected to the T-slot in the lockbolt.

that deadlocks the locking bolt when the back cover is removed. (This is the external relocker, and it is invisible in this photo.)

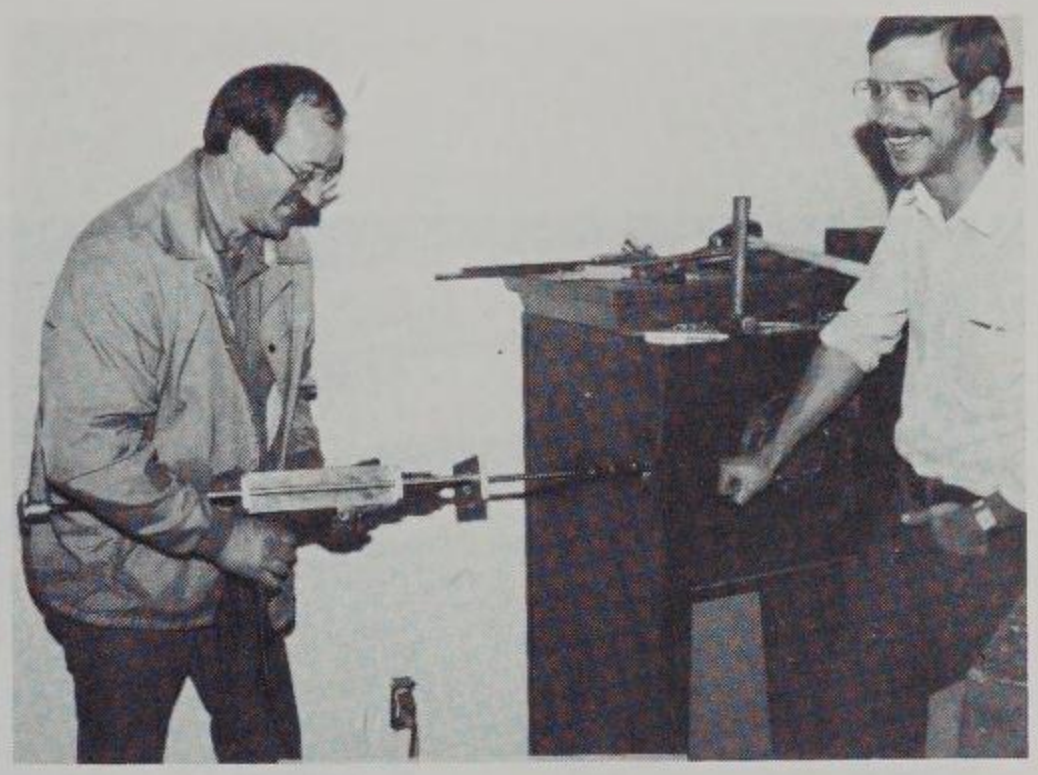
The Herring-Hall-Marvin lug door shown in photograph seven gave us a little problem. Well, actually the problem was



7. Herring-Hall-Marvin lug door safe.

me. Let me explain. The hardplate was carbide-included, so I tried to show off again by demonstrating how fast the Broco could go through it. Now doggonit, I have used this excellent tool a half dozen times on the job with nothing less than a perfect burn, (even last month's fiasco was a perfect burn) and I practice with it all the time, but on this particular day I just plain messed up. No excuses. With the oxygen flow set at 45 psi, it took just 2½ seconds to go through the hardplate, the lockcase and the wheelpack! Usually, you get little telltale signs whenever a plate is penetrated, but this time I either didn't get them or mixed them. And of course, it didn't happen in my garage with no one to see; it had to happen in front of a roomful of locksmiths! Arghhh!

With the lock trashed, we turned Jim Watt and Casey Camper loose with Willie Schock's "secret weapon." (*See photograph 8.*)



8. Jim Watt and Casey Camper with Willie Schock's "secret weapon."

After successfully side punching the locking bolt, the little rascal was finally opened.

Next month we come back from lunch to finish them off. Stay tuned. ■

The HHM/Diebold lug door was a nightmare. I have opened many of these, but this was the toughest one of all. It was the last safe we attacked that night, and when Jim, Casey and I finally got the little bugger open, I was so rummy that I crashed at the local Red Lion Inn rather than try and drive home. Wise choice — brunch the following morning was splendid, as was the daylight drive.

Montana Safe Seminar, Part II

"I still enjoy evaluating barrier materials that I am unfamiliar with, but I am starting to enjoy making side and top penetrations even more."

by Dave McOmie

This is the second installment of a two-part article covering a safe opening seminar given by the author. At the end of last month's article, it was chow time...

After gorging ourselves at the Red Lion lunch buffet, we all came back, and I for one felt more like taking a nap than working. I splashed a little cold water on my face, snapped out of that lethargic trance, and got to work. We rat-a-tatted a few easy ones open, cam-punched the field safe, and lanced open a couple of small Gary single bolt doors.

In the April issue I pointed out the problem of the burning bar and the "air-gap," and this nasty problem reared its head again. Not by burning up any money (the safe was empty), but the escaping sparks ignited the paint on the inside of one of the Gary safes.

2. Victor dial close-up.

1. Antique cast iron Victor fire safe.

3. Lock and boltwork exposed here.

If you haven't guessed already, my opinion of the burning bar and it's practical applications has diminished a little. I see it as being extremely limited as far as field applications go. Yes, I will use it on Manganese, and on the Grade 1 Relsom found in Mosler's higher rated lug doors manufactured in the 1960's; and yes, there are a few imported high-security safes that have barrier materials worthy of its use. But for me, that's about it. In the future I plan on going around hardplate whenever possible.

I still enjoy evaluating barrier materials that I am unfamiliar with, but I am starting to enjoy making side and top penetrations even more. It's safer, saves wear and tear on equipment and body alike, and it's good practice for doing high security safe openings. Lately, I find myself trying different techniques just to break the monotony of using the same old boring approach day in and day out. That's enough editorial for this month.

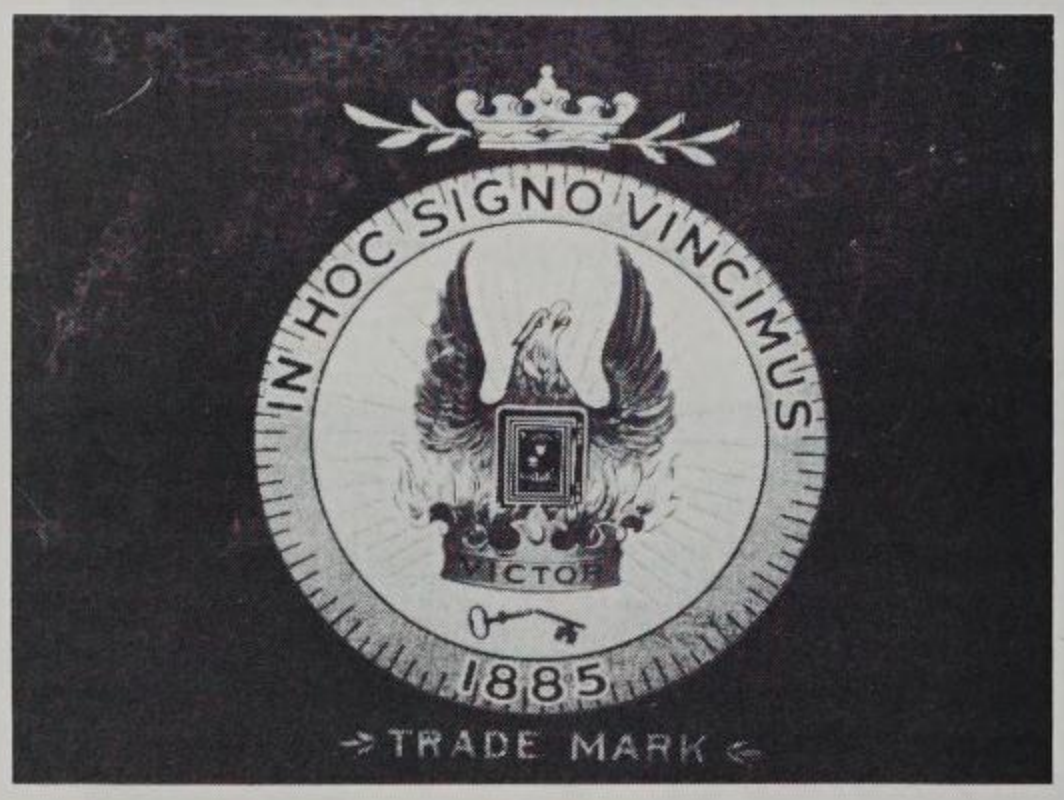
One of the last safes of the day was the old antique cast iron Victor fire safe shown in photograph one. This little guy was in pretty darn good condition; it almost seemed a shame to drill. But the focus of this seminar was on penetration, so that's what we did.

Photograph two is a close up of the dial, which has 100 numbers on it. Notice the little square-shaped pins, or "ears" on either side of the dial knob. These were put there to assist the operator in retracting the boltwork. With no separate bolt control handle, all the work is done by the dial.

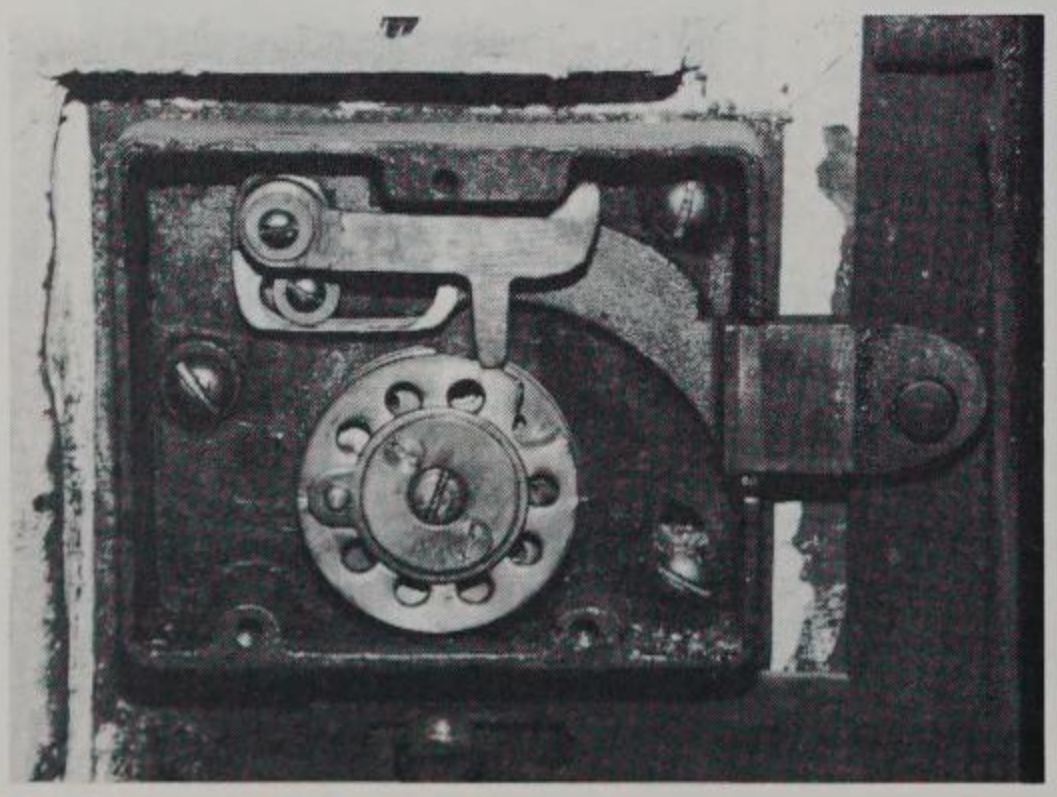
Photograph three shows us the lock and boltwork with the back panel and back cover removed. There are two locking bolts connected to the boltbar, which is in turn connected directly to the lockbolt.

On the back panel, in beautiful condition, is the Victor logo shown in photograph four. Many 19th century safemakers seem to have had a penchant for eagles, and Victor was no exception.

Photograph five is a close-up of the lock, which is a Yale made for Victor, model #L1. The hole that opened the safe can be seen just above the lower right hand mounting screw. If I had been feeling a little more "on" that day, I could have drilled in at 85 or 90 at a little sharper angle and eliminated the number transferring process. But it was one of those days



4. Victor logo found on the back panel.



5. Yale lock made for the Victor.

6. Lock with combination dialed and bolts retracted.

7. Older model Victor. Notice dial location.

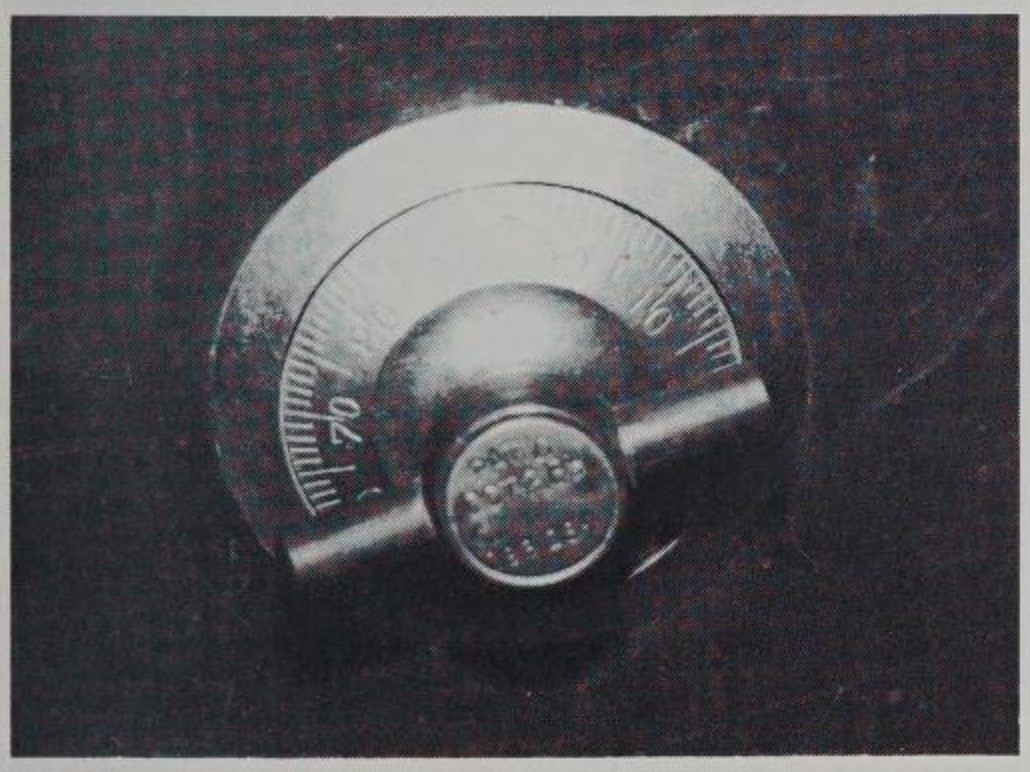
when a guy feels lucky to hit the broad side of a barn, so I took the safe way out (no pun intended).

In photograph six the combination has been dialed, and the bolts have been retracted. For your information, there are two 1⅞" diameter wheels with a rear mounted driver. The last turn of the dial is to the right, and the stop position is about 70. There are no relockers.

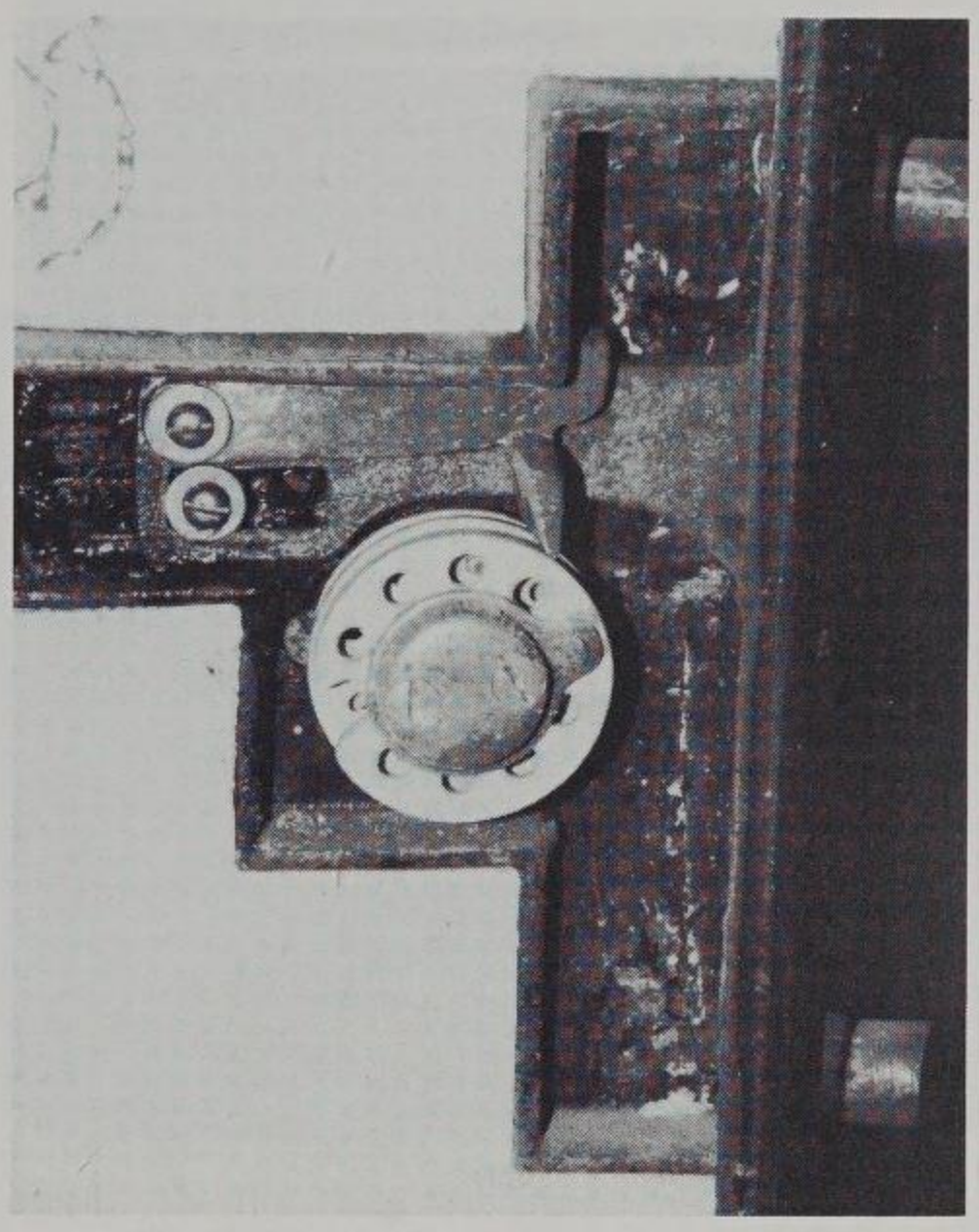
At this time I want to thank all my new friends in Montana for putting up with me for a full day, and I especially want to thank my hosts, Jim and Barbara Watt, for their organizational help and hospitality. I had a truly enjoyable time. We are now going to depart from the seminar to complete this in-depth examination of Victor cast iron fire safes.

Photograph seven is of an even older model Victor. This safe is the same size as the previously discussed safe, but notice the dial is located much closer to the opening edge of the door.

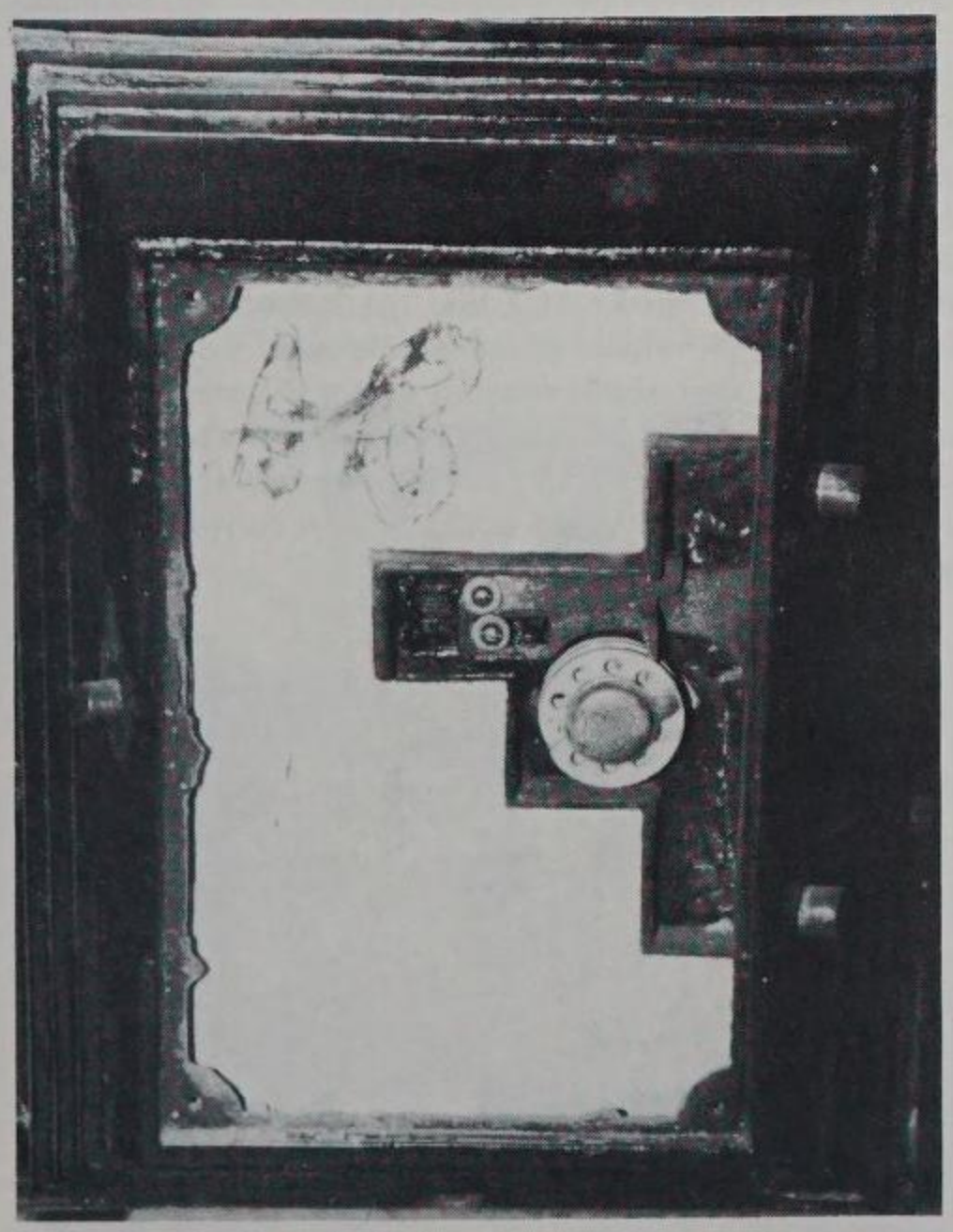
Photograph eight is a close-up of the dial. Two things are



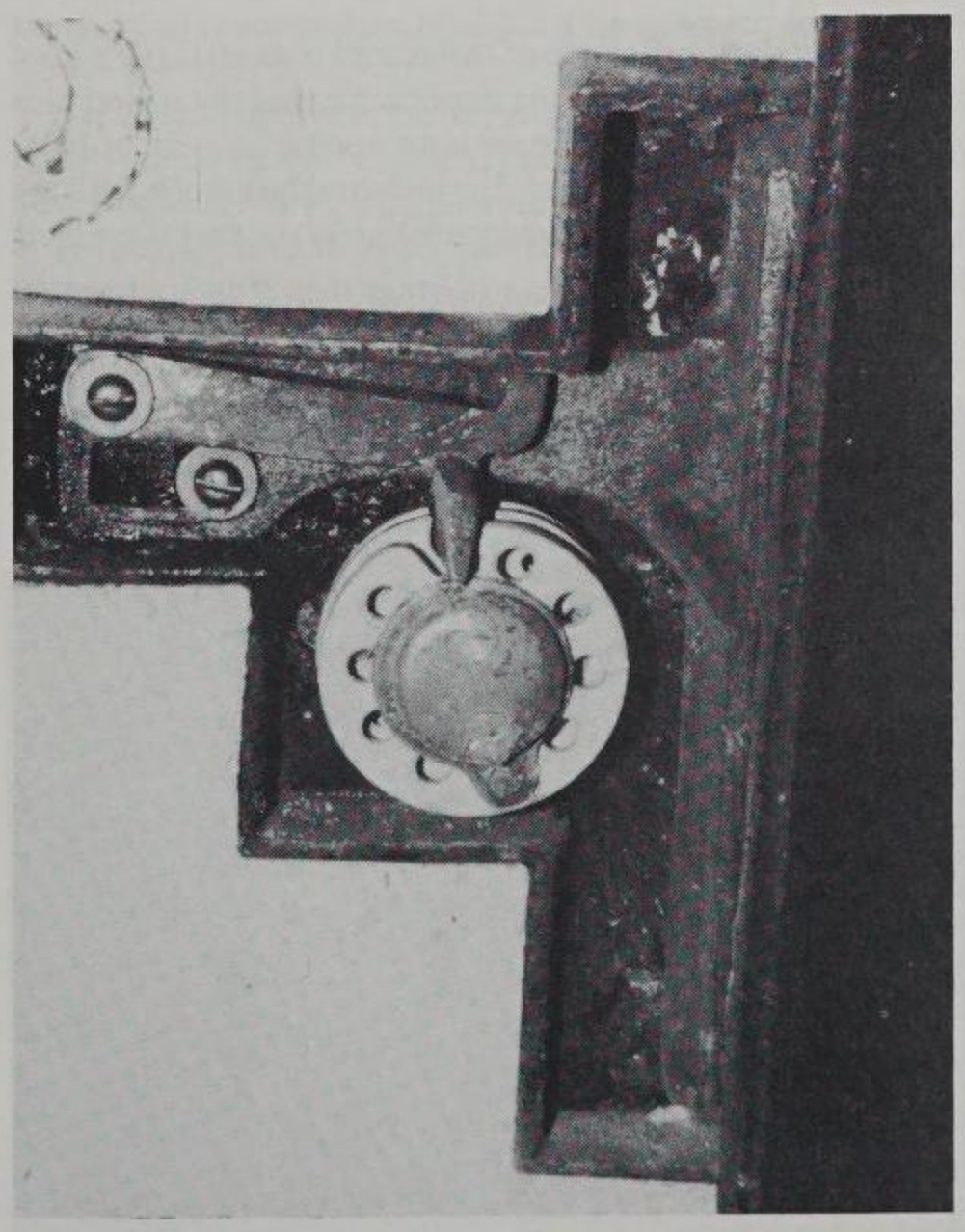
8. Close up of old dial.



10. Close-up showing the locked position.

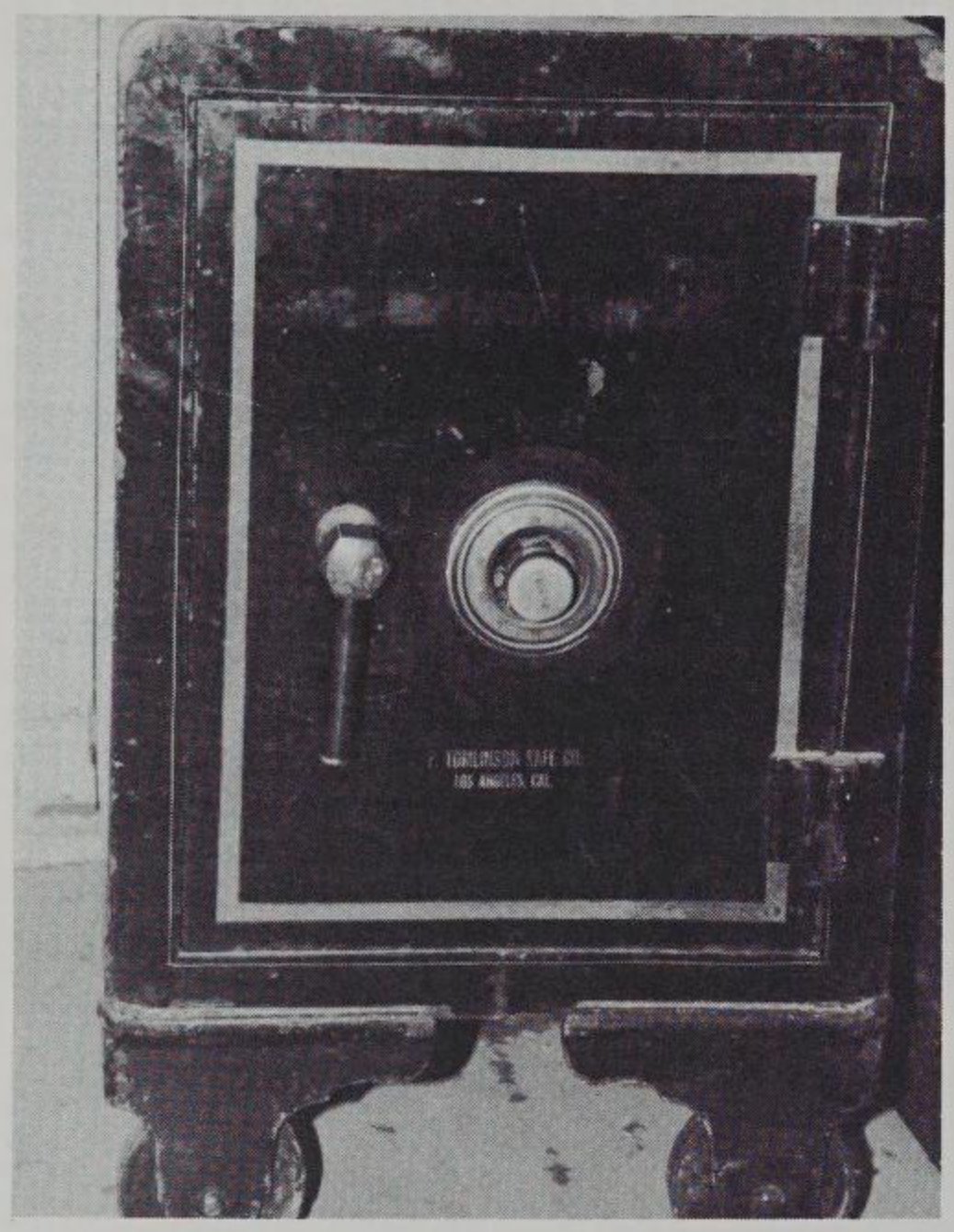


9. Lock and boltwork. Notice that there is no lockcase.



11. Bolts in retracted position after the combination has been dialed.

noticably different about this dial: the ears, or pins sticking out of the dial knob are now round instead of square shaped; and the 100 number dial has a double zero (00), instead of a



12. Victor fire safe with a handle.

single zero (0). For the record I should point out that Victor also produced a 60 number dial (also with round pins) that was used in the older model safes.

What is the significance of the round pins sticking out of the dial? Well, it has been my experience that the round pins indicate the older style safe with an open case type of lock.

Photograph nine shows us the lock and boltwork with the back panel removed. We can immediately see that there is no lockcase.

Photograph 10 is a close-up with the lock and boltwork in the locked position. Notice, in the open-case lock, that the lever is connected directly to the boltbar; there is no lockbolt.

In photograph 11 the combination has been correctly dialed, and the bolts are in the retracted position.

Any tour of cast iron Victor fire safes would be incomplete without the inclusion of the model that uses a handle, as shown in photograph 12.

Photograph 13 is a close-up of the dial and handle. the pins, or ears are conspicuously absent, but the sexagon

14. Two locking bolts with no connection to the lock.

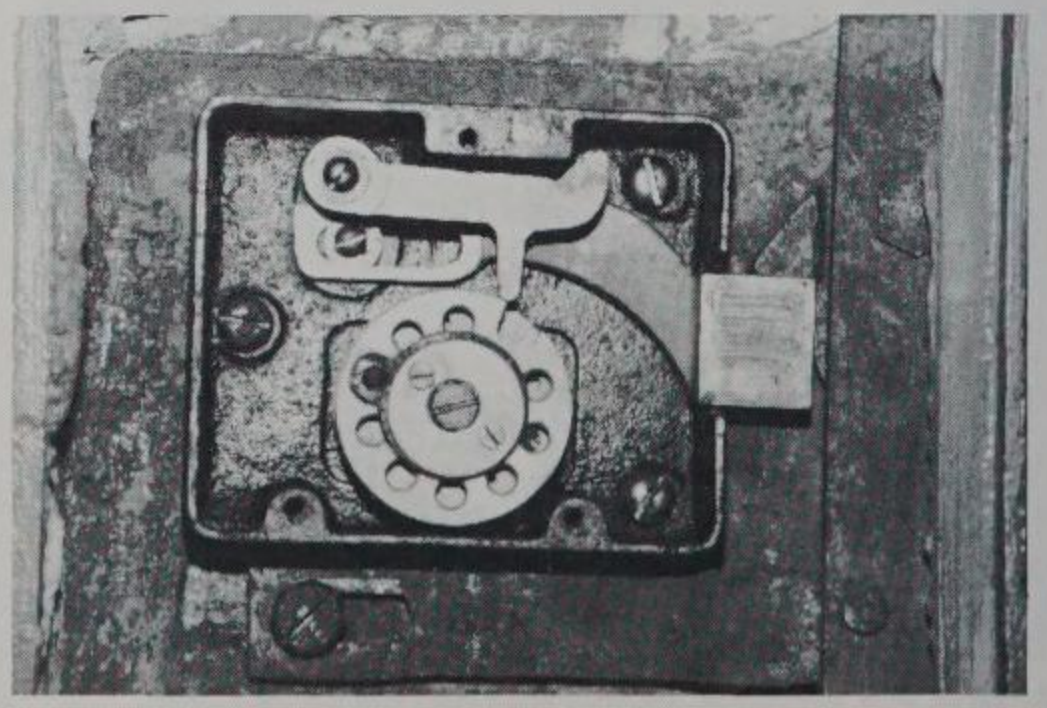
shaped handle is the distinctive feature for making positive ID. No other manufacturer that I am aware of ever used a handle even close to this in appearance.

In photograph 14, the back panel and back cover have been removed, exposing the lock and boltwork for our inspection. For the third time, there are two locking bolts, and if you will notice, there is no direct connection to the lock.

Photograph 15 is a close-up of the lock, which is a Yale made for Victor model #L2, and the lockbolt is properly used to block movement of the handle cam.

Well folks, that about wraps it up for this month. I certainly hope everyone is enjoying beginning of what is surely to be a super summer, and I am looking forward to seeing many of you in Las Vegas at the ALOA convention later next month. ■

13. Close-up of dial lacking pins or ears.



15. The #L2 Yale lock made for Victor.

Opening A Monster By Mosler

"I was escorted back to the big black Mosler I hadn't seen for nearly a decade. After trouble-shooting for half an hour, I decided to drill."

by Dave McOmie

Eight or ten years ago Joe Courtade, who was then with Associated Safe & Lock, and I spent a sweat-filled, nerve-wracking day drilling open the monster shown in photograph one. This is a Mosler porta-vault that was custom built for the Post Office back in 1917.

I had all but forgotten the opening when one day a particular *Shop Talk* question crossed my desk. It was from Richard Fulford of Palestine, Texas, who sent in some excellent drawings of a near-identical unit and requested some information.

My memory having been jarred, I was gathering together some specs for Richard, and gazing at the photographs I had taken on that day long ago, when the phone rang.

It was Dan, the new owner of Associated Safe & Lock. (Joe is back at my old alma mater, Allied Safe & Vault.) And what do you suppose he wanted? You guessed it. The main branch of the Post Office was locked out of the big, black Mosler and needed it opened the day before yesterday.

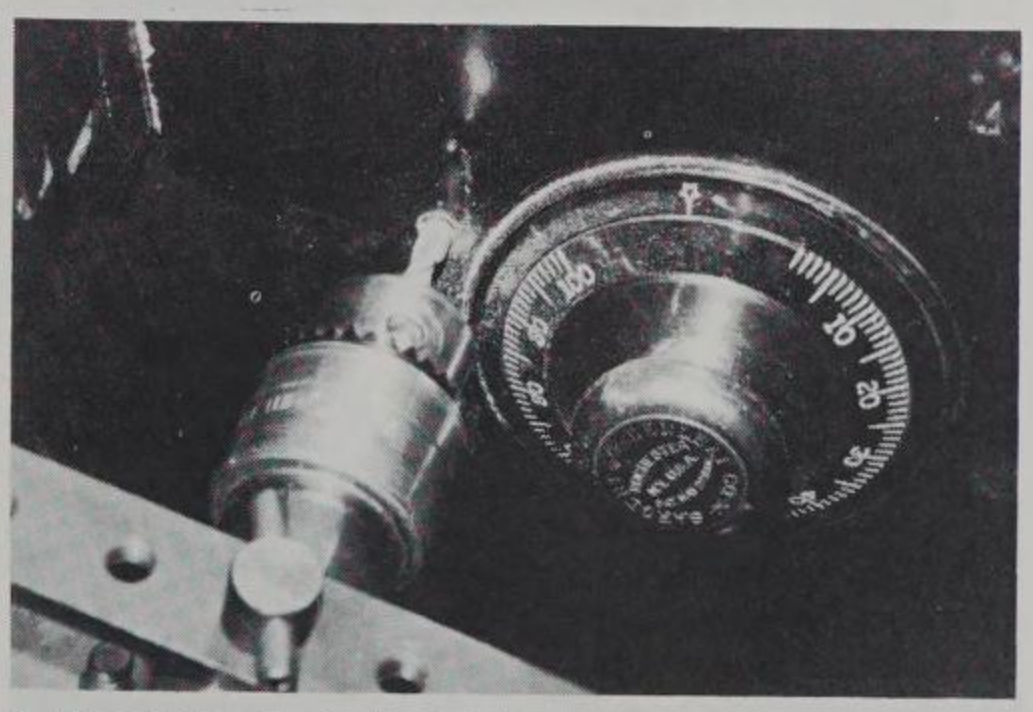
Arriving at the jobsite barely a heartbeat later, carrying my tool kit under one arm, and camera case under the other, I was escorted back to the Mosler I hadn't seen in nearly a decade. The first thing that grabs my attention on any antique Post Office safe is the logo shown in photograph two.

2. Antique safe postal logo.

After spending nearly 30 minutes trying to cuss, rattle and bang (read troubleshoot) the darn thing open, the decision was made to drill.

I compensated for the offset, center-punched the drill point right at the fence, and in photograph three penetration has crossed the two inch mark and penetration is proceeding at an incredibly slow pace. This is a laminated door, and I'm telling you, that last plate is extremely hard. My guess is manganese.

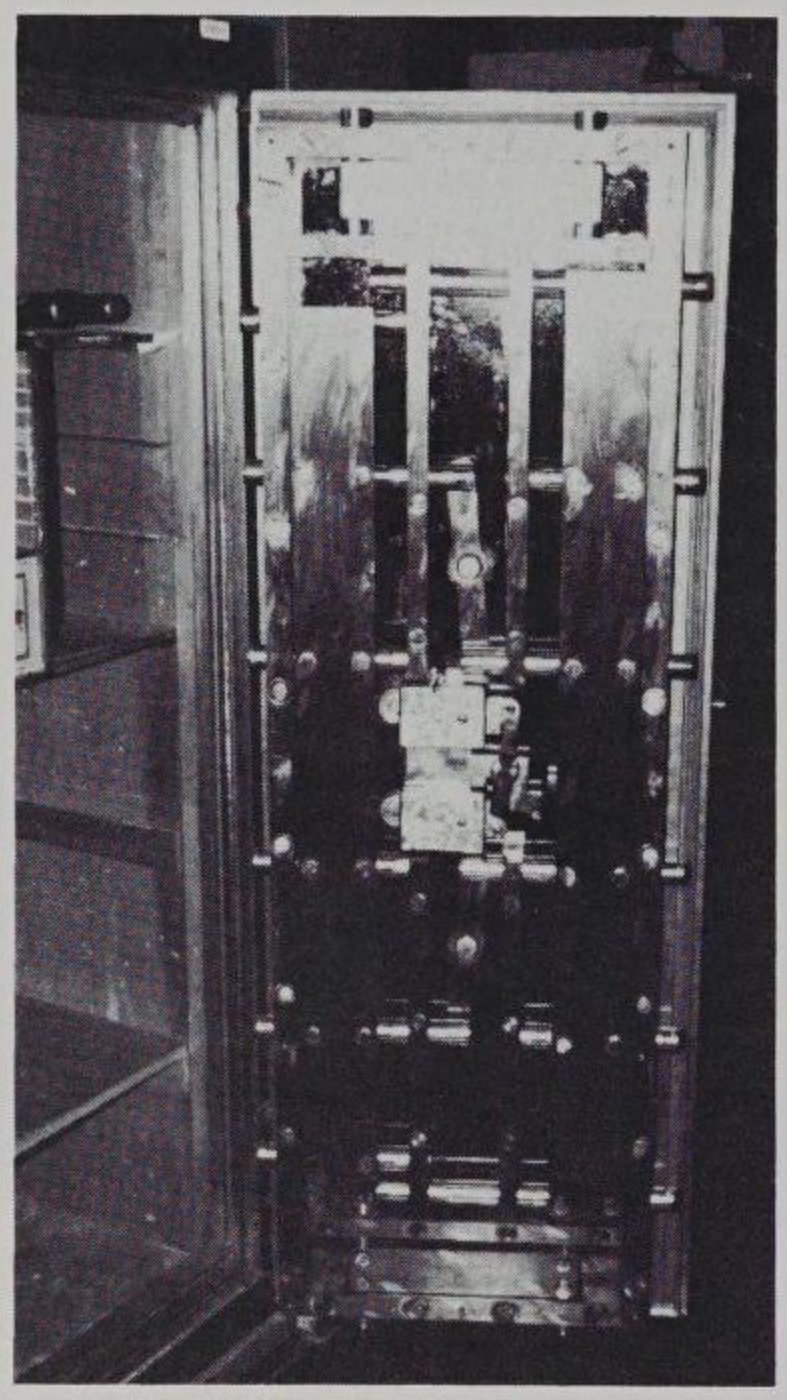
1. Custom built Post Office Mosler porta-vault, from 1917.



3. Penetrating the laminated door.

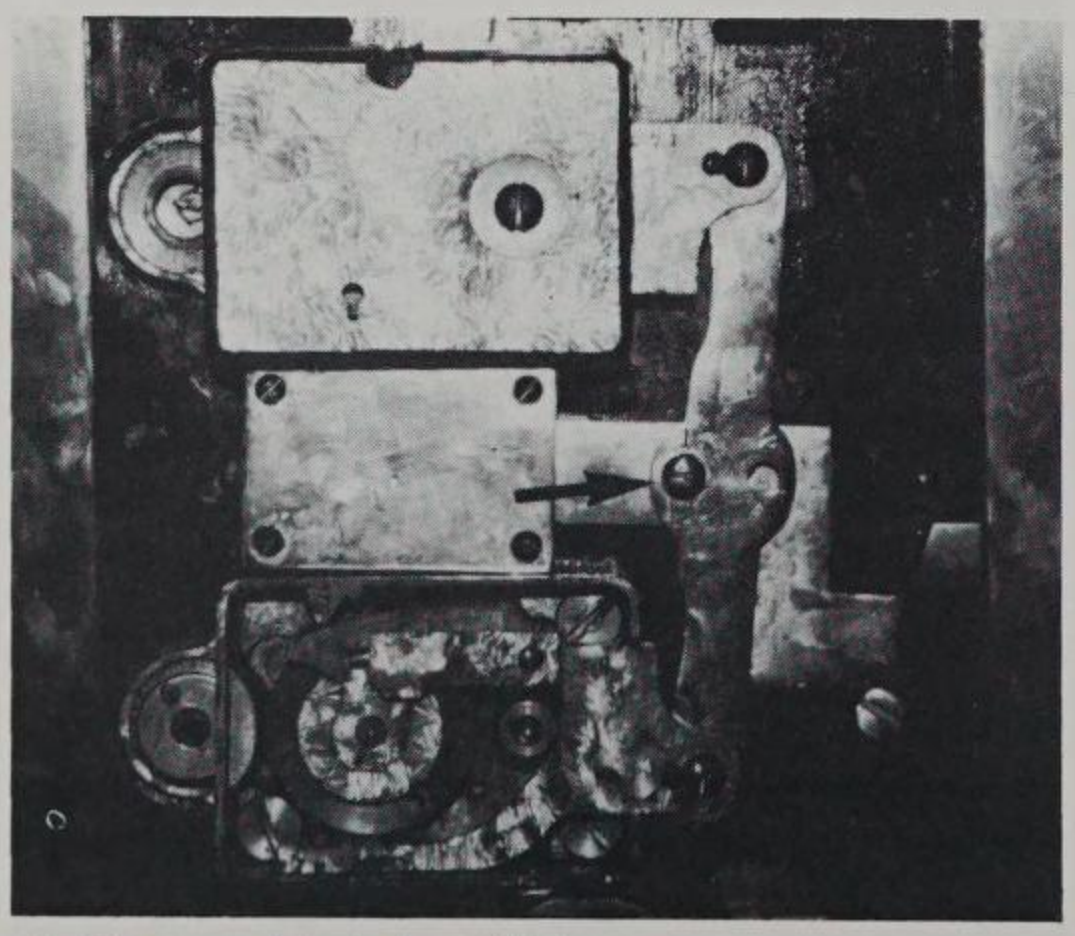
Well, the hole was absolutely perfect, right on the fence, but I had a heck of a time getting the fence to drop in. I ended up beating and prying it down, and was finally able to retract the lockbolt, opening the door.

In photograph four, the large back panel has been removed, exposing the locks and boltwork for our inspection. In this photograph the locking bolts are in the extended (locked) position. Notice there are active bolts on all four sides.

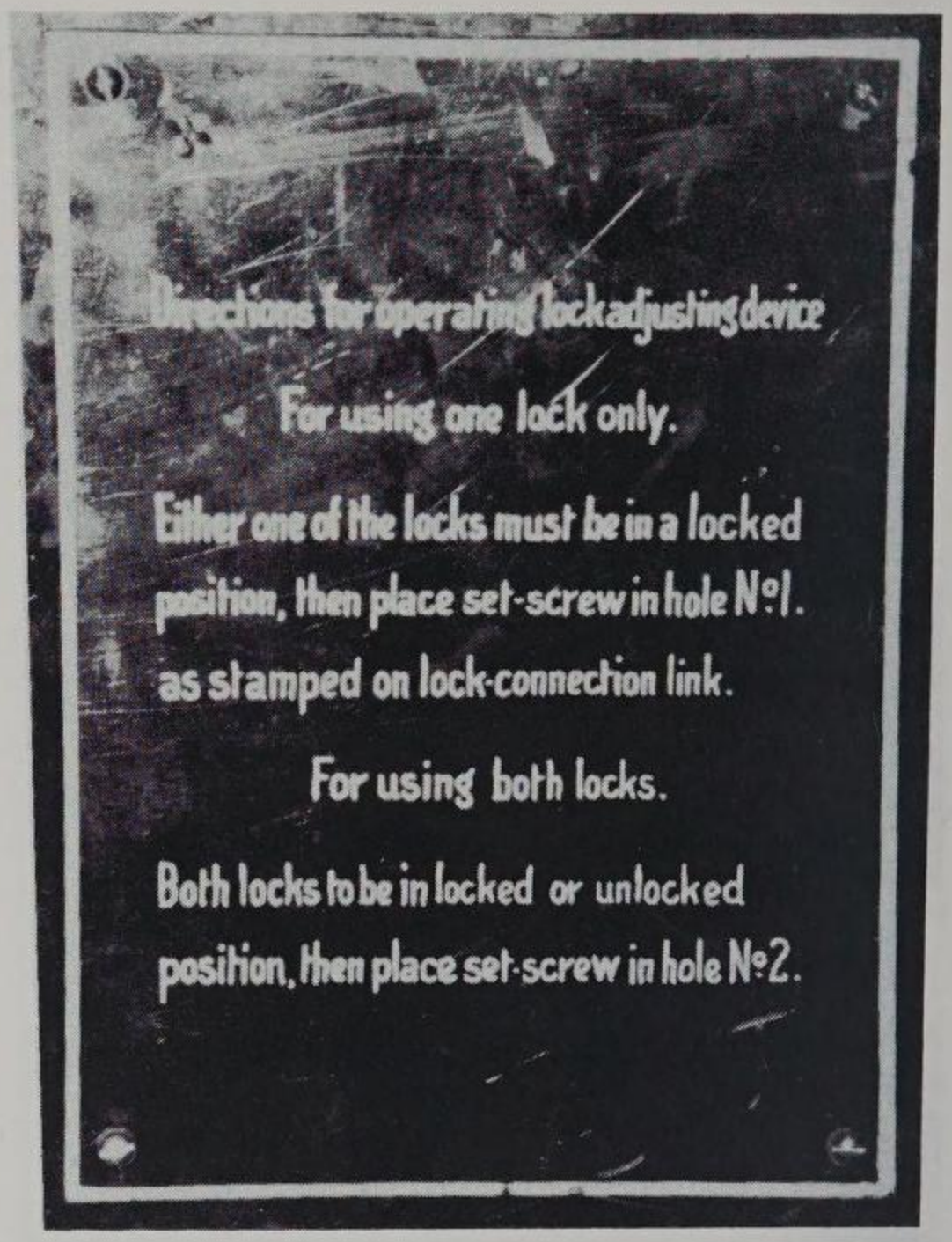


4. Exposed boltwork on the door.

Photograph five is a close-up of the locks and linkage. Observe the arrow, it is pointing to a screw under the "1". With the screw in the #1 hole, either lock can be used independently of the other to open the door.



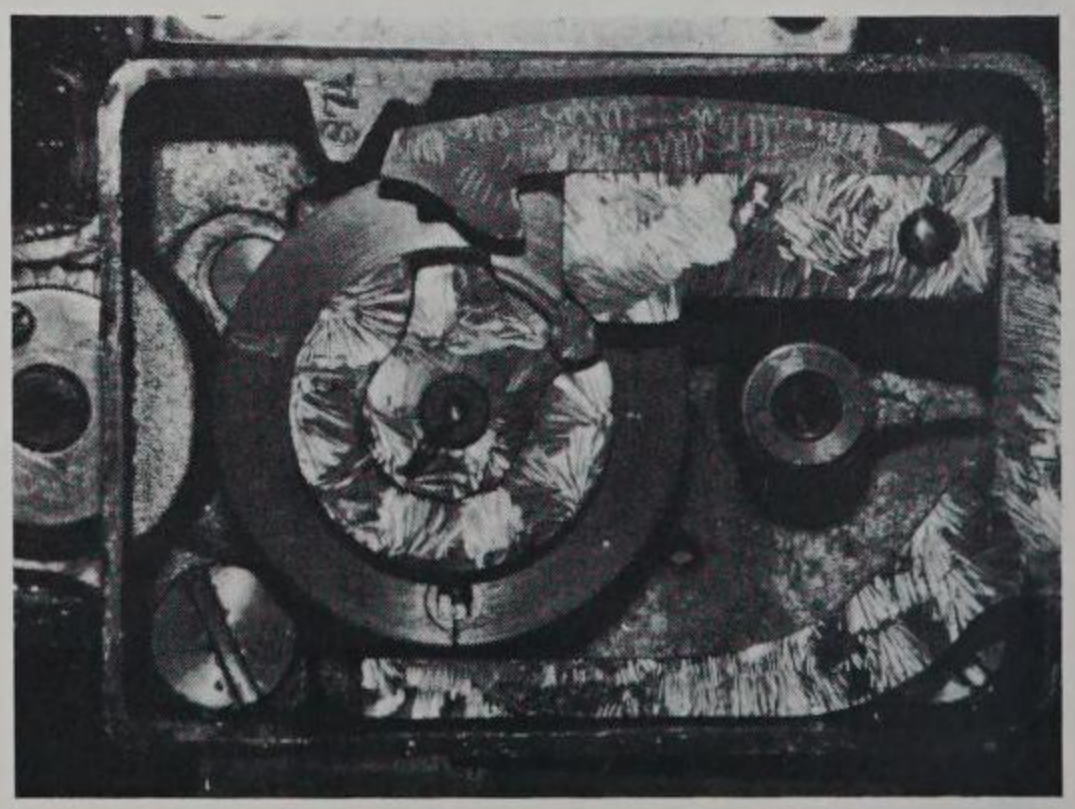
5. Close-up of the locks and linkage.



6. Directions for unlocking both locks, printed on the back panel.

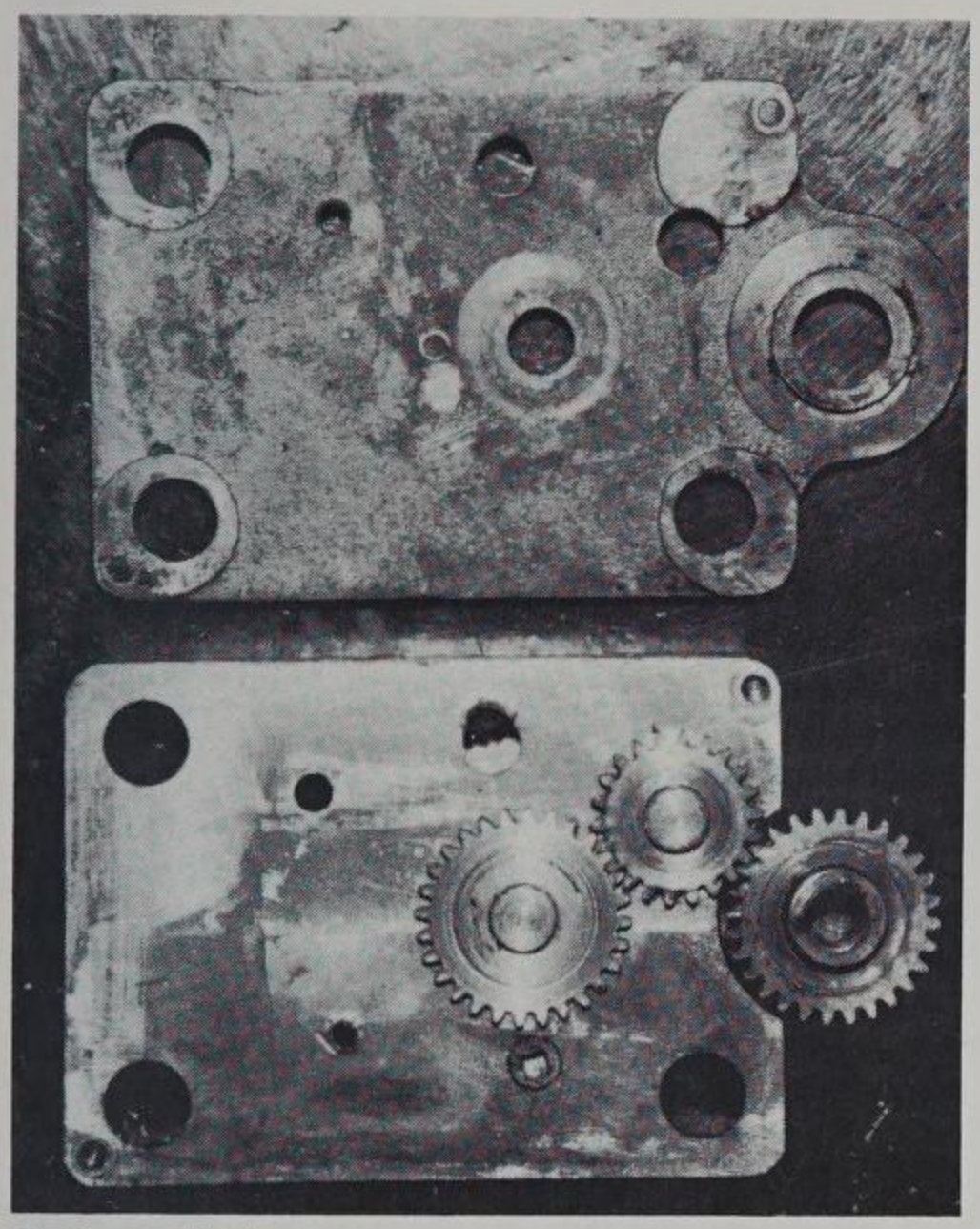
If the screw is put in the #2 position, then dual-custody is achieved, meaning *both* locks have to be unlocked to open the door. Directions for doing this are on the back panel as shown in photograph six.

Photograph seven is a close-up of the lower lock. This is an old obsolete bronze case S&G #6575, which is an outside, or indirect drive lock. Notice the spindle to the left of the lockcase. The offset from dial center to wheel center, which is a critical measurement to have, is 1¾". The other important measurement to have is the wheel diameter, which is just a shade over 2". Notice the numbers 671 stamped into the lever stop. (More about this shortly.)



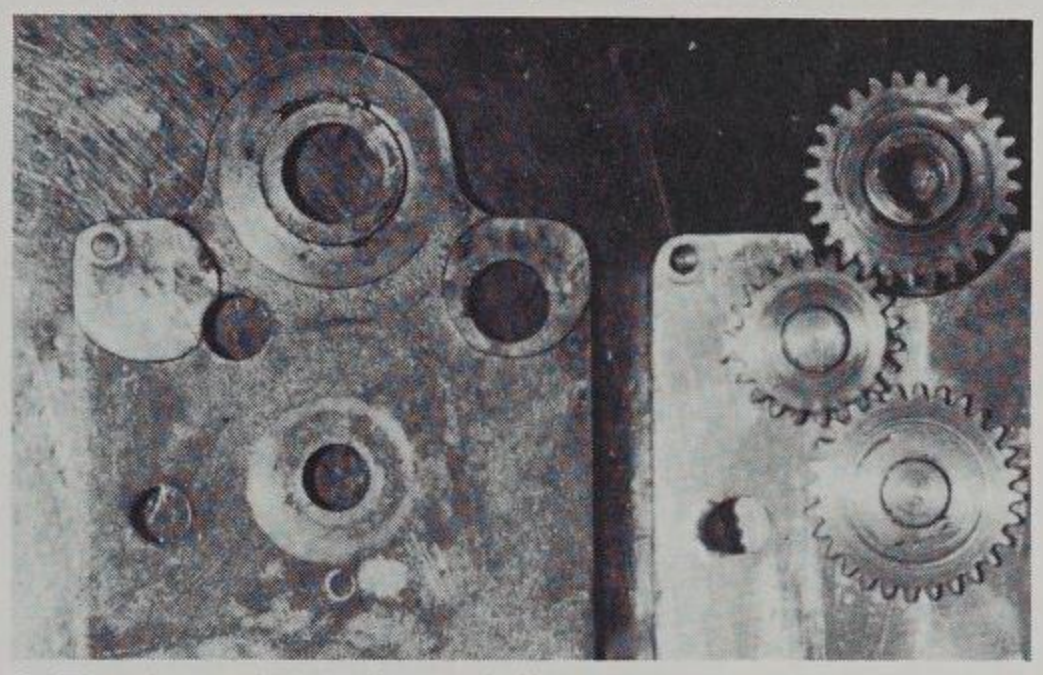
7. Lower lock close-up of bronze case S&G 6575.

In photograph eight I have turned the lock over and removed the front cover, exposing the gears which transmit motion from the dial to the drive-cam. The dial spindle threads into the gear on the right. The idler gear is in the middle; and the gear on the left is connected to the spindle onto which the drive-cam is threaded. Above this gear can be seen the hole which opened this monster. The use of three gears in their indirect drive locks enabled S&G to maintain their standard dial rotation, in which the last turn is right to stop.



8. Exposed lock gears.

Photograph nine is of the all-important change key, or wrench, as S&G called it back then. Note the 671 stamped on the wrench, that corresponds with the number we saw stamped on the lock back in photograph eight. Each lock has its own number, which is stamped onto many of the parts, and also its own wrench (change key). As I write this I know that the change keys will interchange, but I am not sure if all the parts will interchange from lock to lock. If anyone reading this knows the answer, please drop me a line. ■



9. The change key or "wrench."

I am now the proud owner of this monster. The post office decided they wanted a new one, and I volunteered to get the old one out of their hair. That's me — Dave The Volunteer, doing his civic duty.

Unidentified Flying Safes?

"This month I have a problem and I am hoping that you can help me. Here are some photos of safes that I cannot identify. Can you identify them?"

by Dave McOmie

Those of you who have been reading this column over the last couple of years know the importance I attach to proper safe identification. Well this month I have a problem, and I am hoping you can help. The problem is that I have a stack of photographs almost a foot high of safes that I cannot identify. No, I am not kidding.

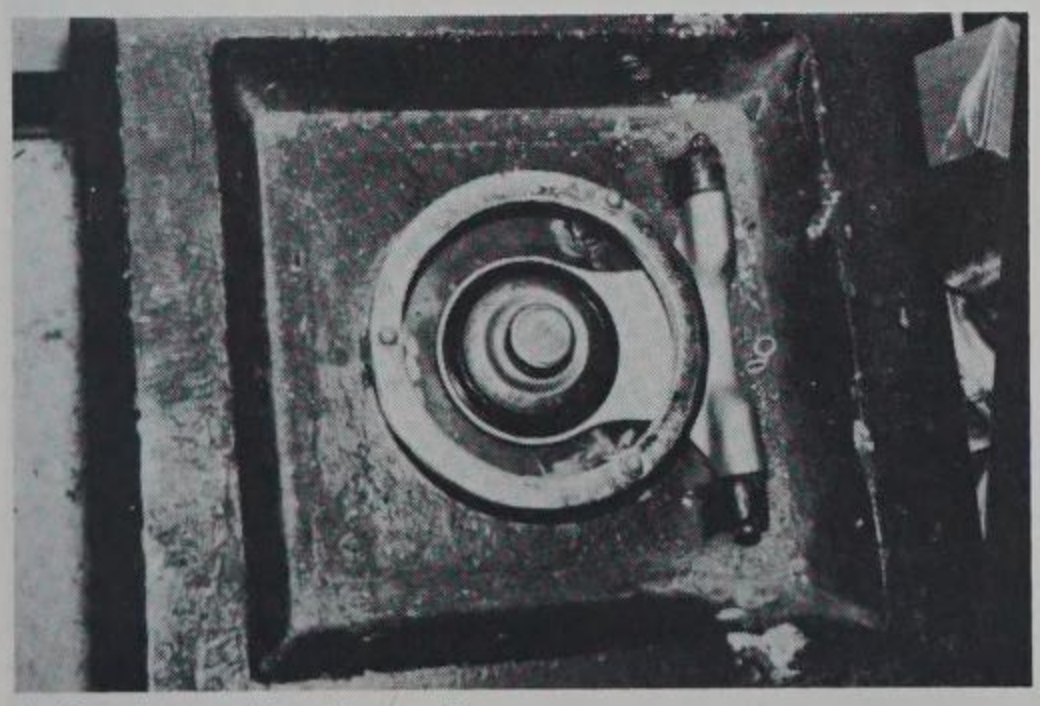
This month we are going to take a look at some of these USP's (unidentified safe photos), and just maybe this will jar a memory or two out there.

You may have an old sales catalog with one of these in it, have recently worked on one that still carries the manufacturer's name, or you just may have an inkling from experience. If so, please drop me a line—I have got to start whittling away at that stack! Every so often I intend to repeat this appeal to my reader's resources until my unidentified stack is below an inch. This ought to take place around the year 2020. We had better get to work.

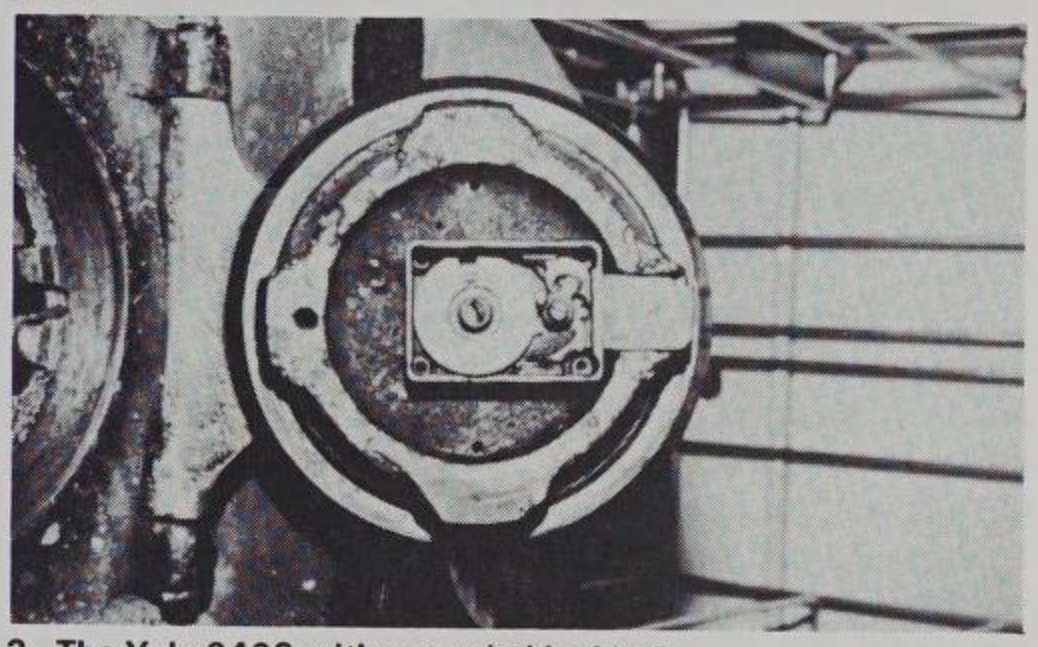
This is a small round lug door. (*See photograph 1.*) On the outside we see a steering wheel for rotating the door, and a Yale dial and ring. On the inside (*see photograph 2*) we have a Yale #0402 (a miniature OC-5) with an extended lockbolt. There is also the provision for a relocking bolt. The extended lockbolt, and the style of relocker strongly suggest Diebold, but nothing in my library can confirm this. Can you?

Photograph three shows a hinged round door, that does *not* rotate. On the outside we see the Sargent & Greenleaf dial and ring, and a T-handle. We also see a somewhat unique looking crane hinge. York, and Herring-Hall-Marvin are two manufacturers I know of that used this hinge. On the inside (*see photograph 4*) we see an old S & G M6730, and four locking bolts. From the inside it vaguely resembles one model Guardian safe, but "vaguely" becomes the operative word here. Help!

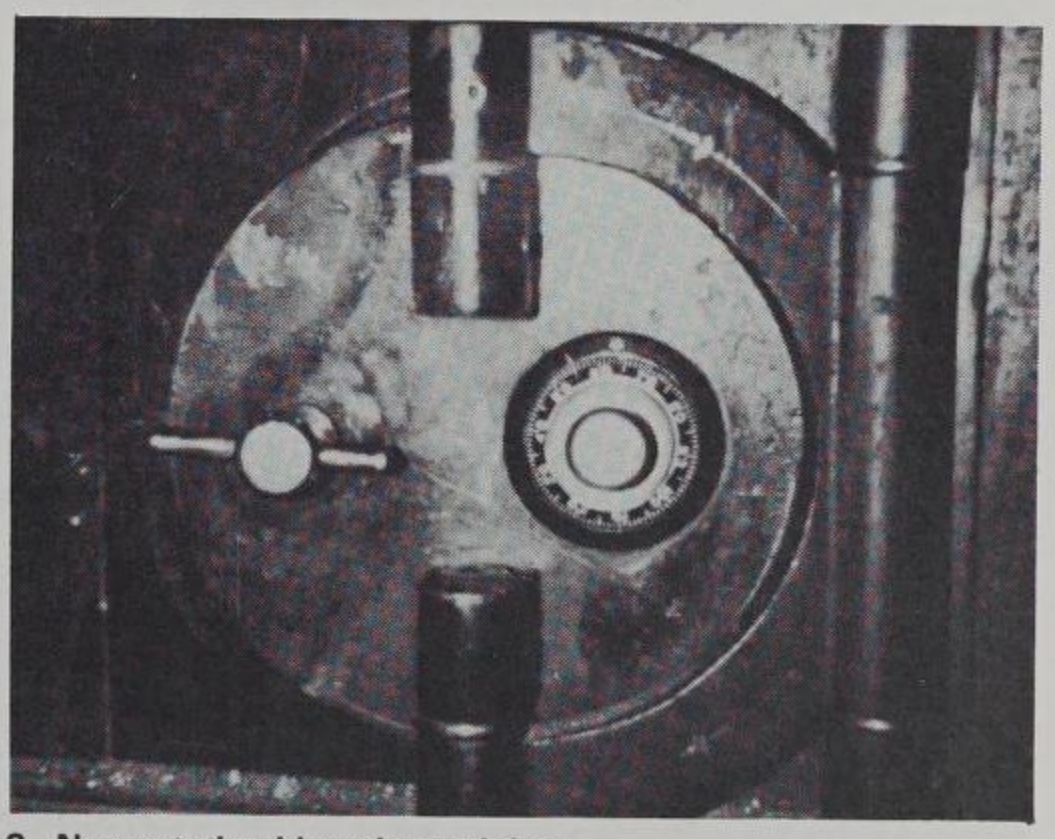
The hinged round door, shown in photograph five, does not rotate. On the outside we see a Yale dial and ring, and a little pull handle off to the left. On the inside (*see photograph 6*) it gets interesting. The lock is a Yale 0700, which was generally used on inexpensive fire safes. In fact this is the only money safe I can recall ever seeing that was equipped with this lock. For the record, Meilink, Schwab, and Protectall were the big users of the 0700.



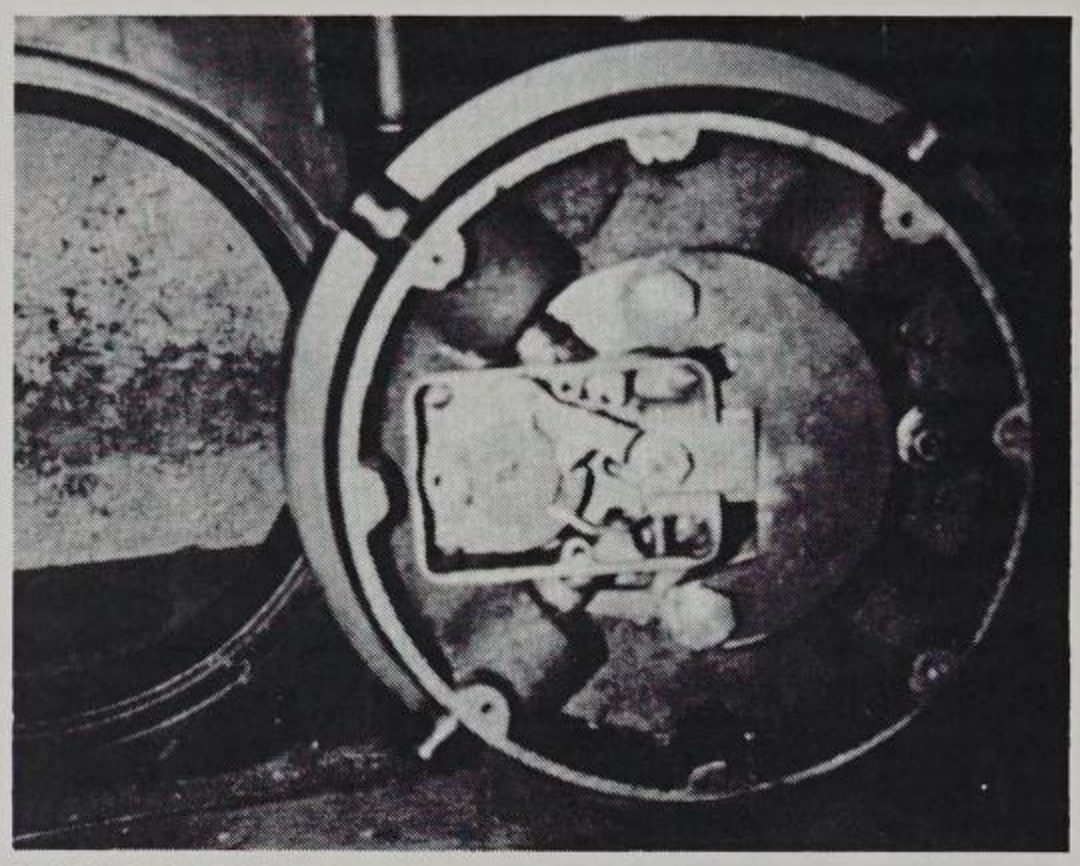
1. Small round lug door safe.



2. The Yale 0402 with extended lockbolt.



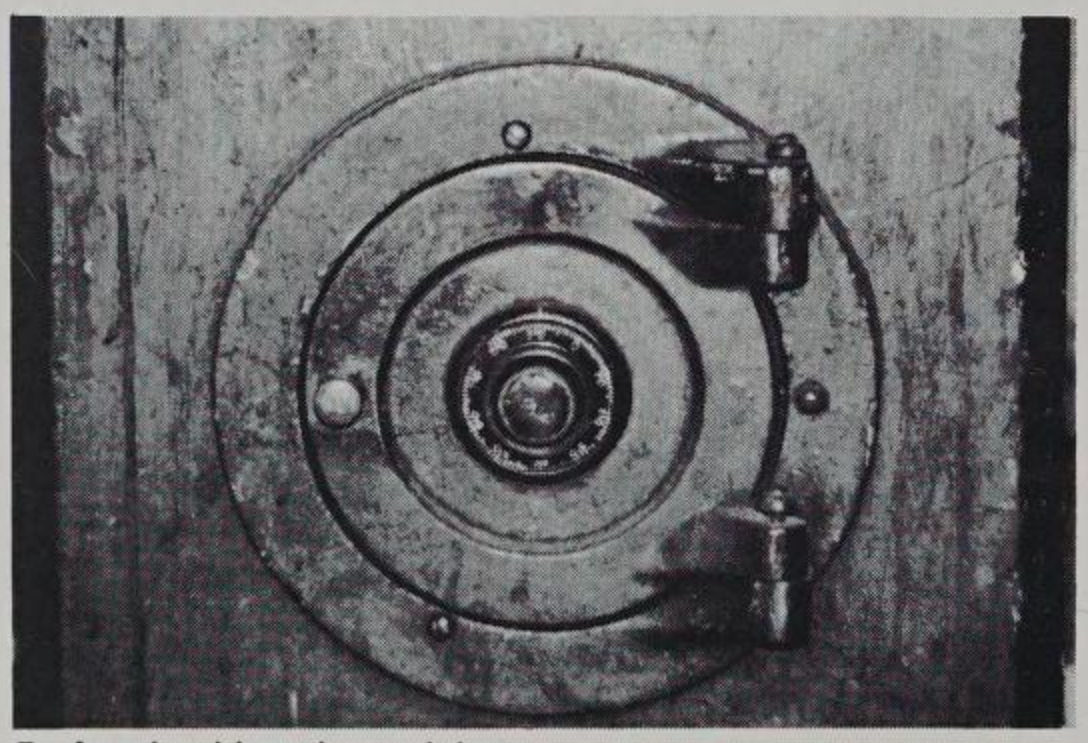
3. Non-rotating hinged round door.



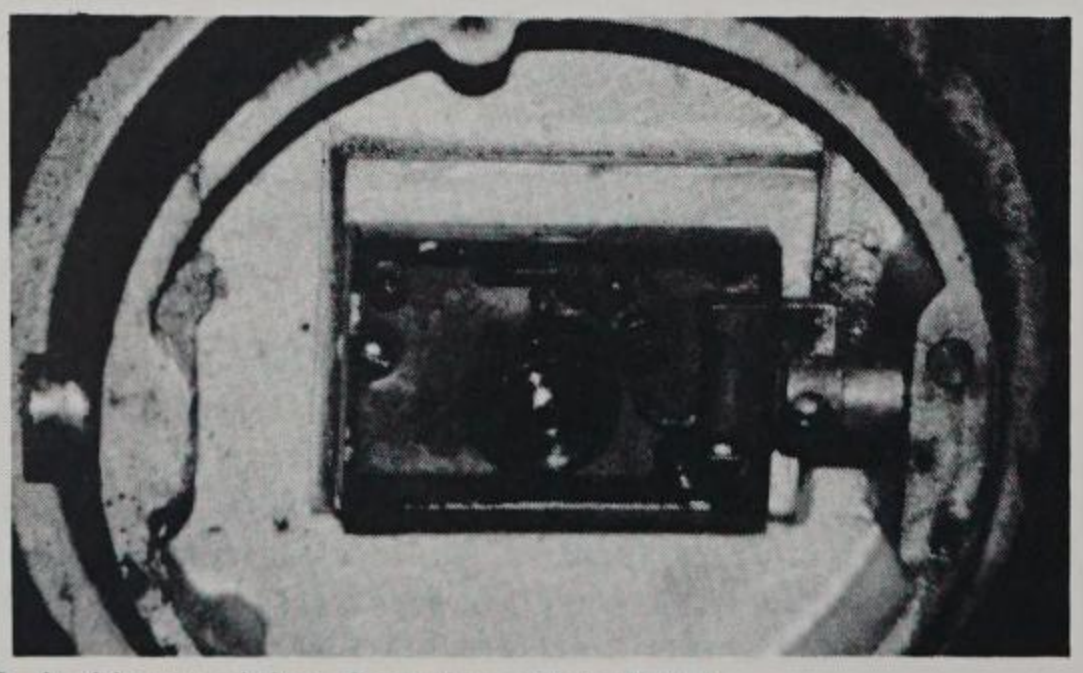
4. Old S & G M6730 with four locking bolts.

The external relocking device suggests Meilink/Johnson-Pacific, but the door was obviously manufactured before Johnson Safety Vault became Johnson Pacific, so I am going to guess Meilink or Johnson Safety Vault. Can anyone confirm or contradict this?

Here is a 10″ square door that rings no bells with me whatsoever. (*See photograph 7.*) On the outside we see a Sargent & Greenleaf spyproof dial and ring, an odd style Sargent & Greenleaf handle, and a nondescript hinge. On the inside (*see photograph 8*) we have a Sargent & Greenleaf RG730 and two large locking bolts, each with its own separate relocker. The only observation I can make is that Victor

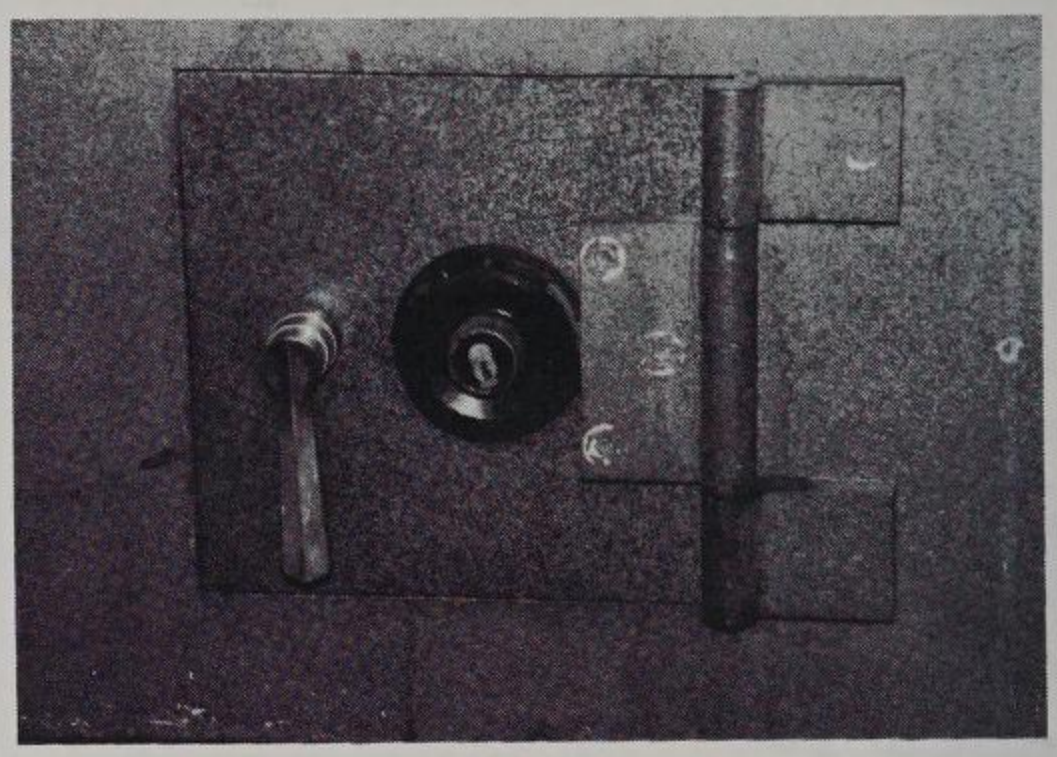


5. Another hinged round door.

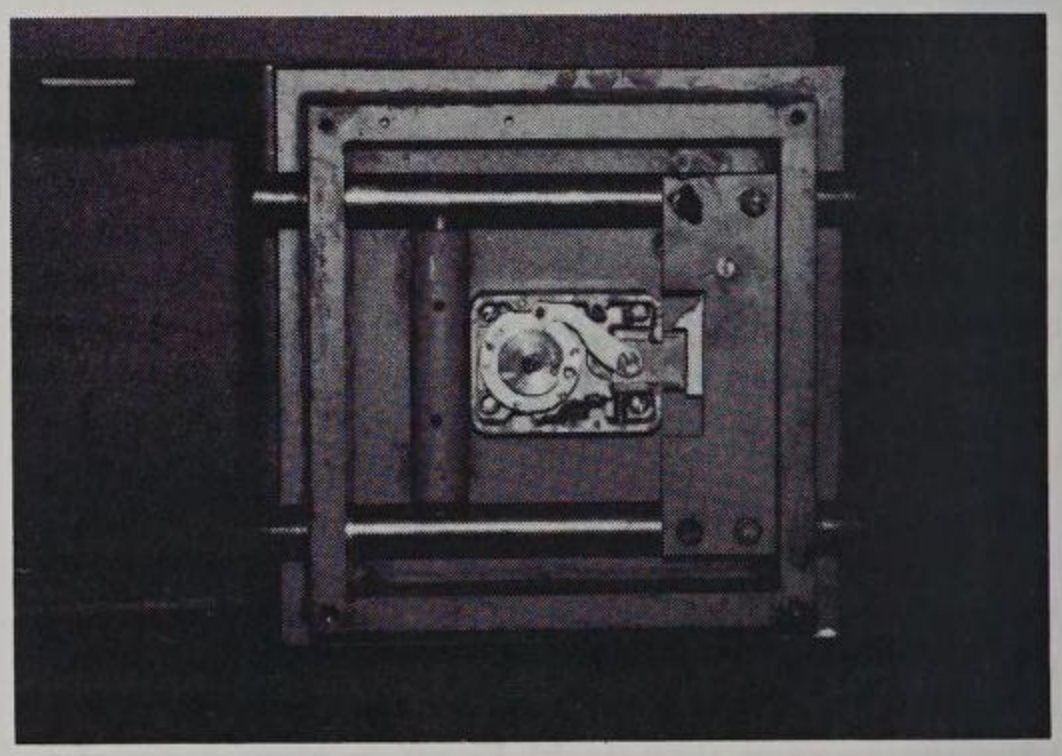


6. Inside round door featuring a Yale 0700.

was the single largest user of that type handle. As to who manufactured this safe, I have no idea. Do you?

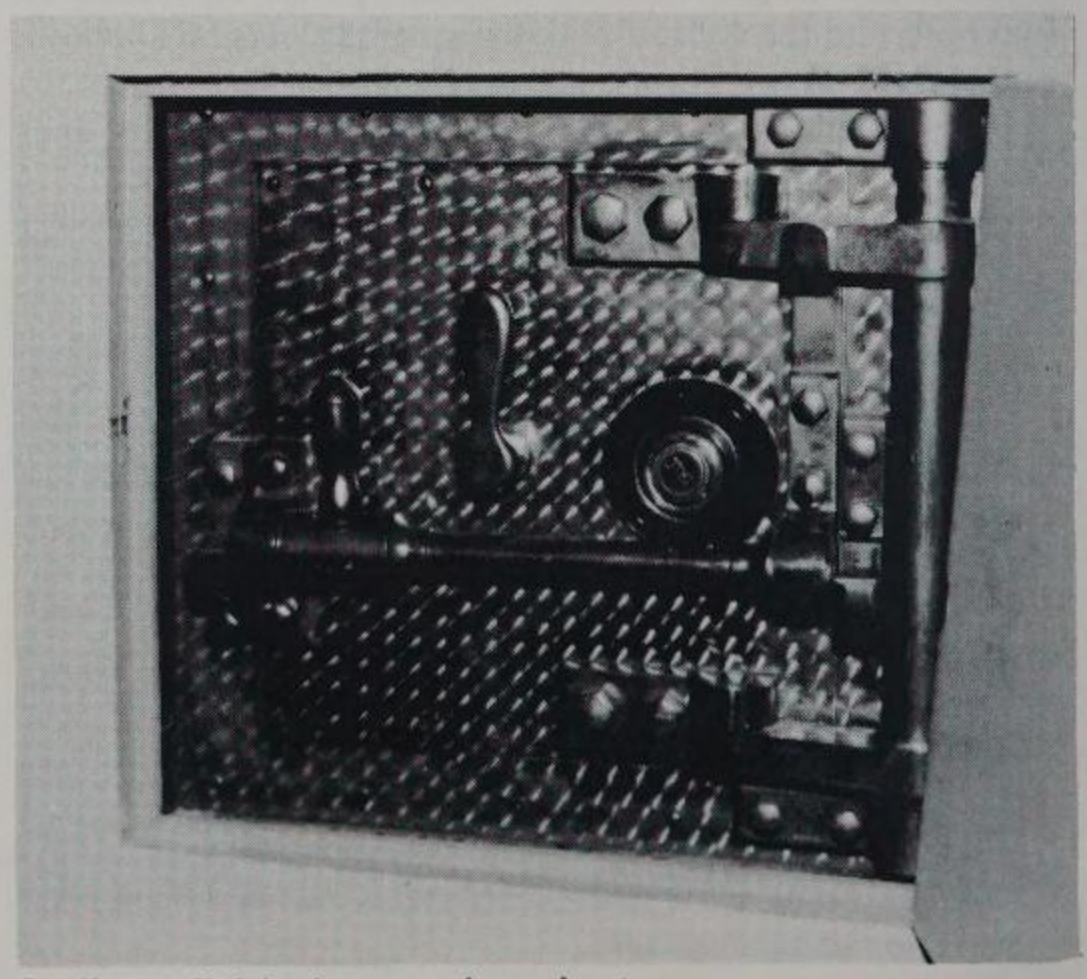


7. 10″ square door safe with S & G spyproof dial.

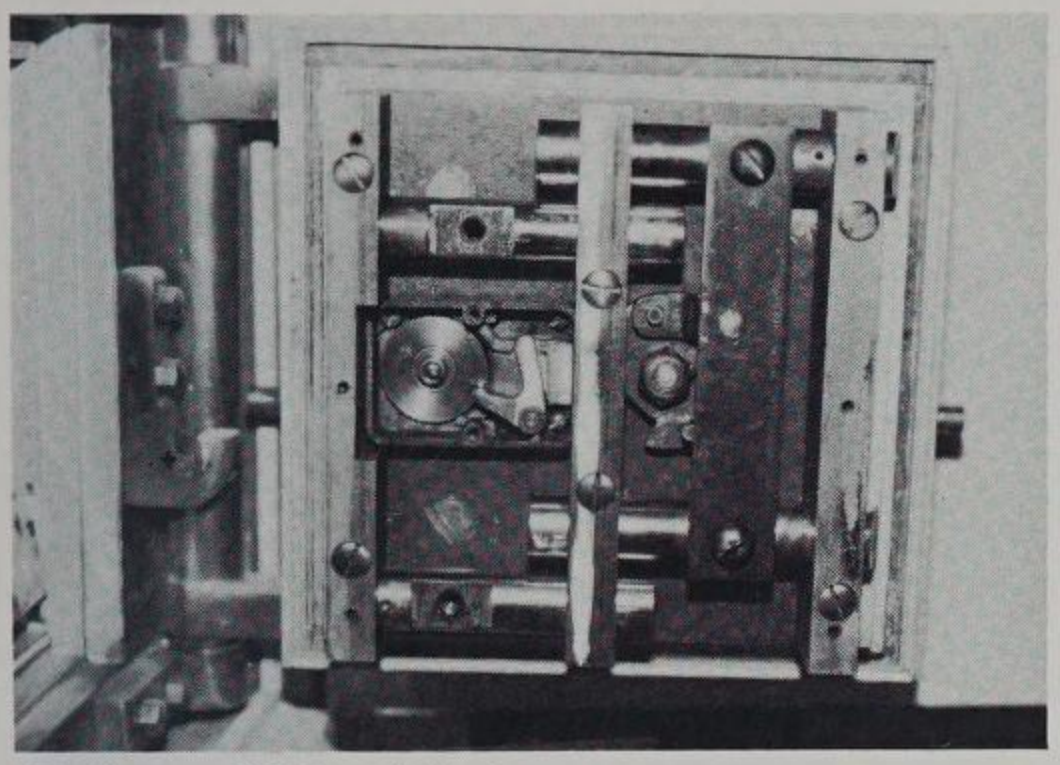


8. S & G RG730 with two large locking bolts.

Here is an odd looking old square door chest. On the outside we see a door with a jiggered finish, and a Yale dial and ring. (*See photograph 9.*) The bolt control handle is slightly reminiscent of Herring-Hall-Marvin. The stubby little handle on the pressure looks familiar but I can't place it; ditto the hinge.



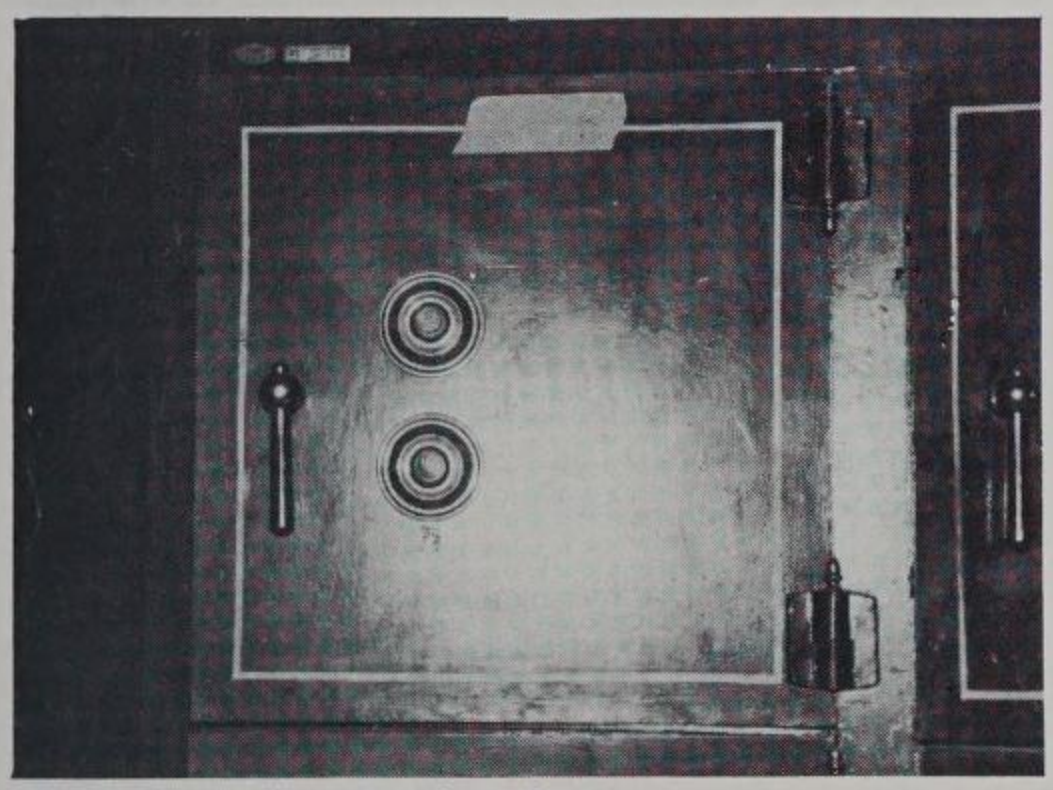
9. Jigger-finished square door chest.



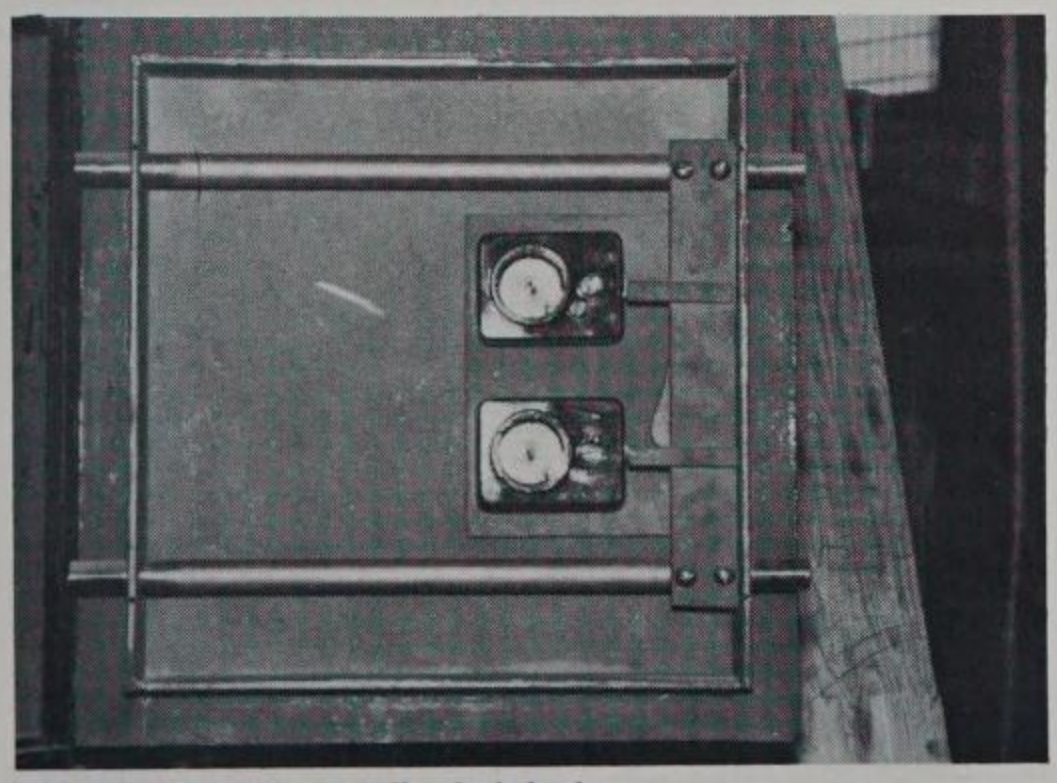
10. The rare OC-5 model lock.

On the inside we have a very rare model OC-5, (*see photograph 10*) and four locking bolts. This one is a real mystery to me. Any ideas?

Photograph 11 shows an old square door chest set up for dual custody. Both locks have to be unlocked to open the door. On the inside we have a pair of Yale #026's (*See photograph 12.*) These are iron case roller-bolt locks. The only thing that even gives me a clue are the York-ish looking hinges. But since York wasn't the only manufacturer to use these double L-type hinges, this isn't really much of a clue. Can you clue me in?

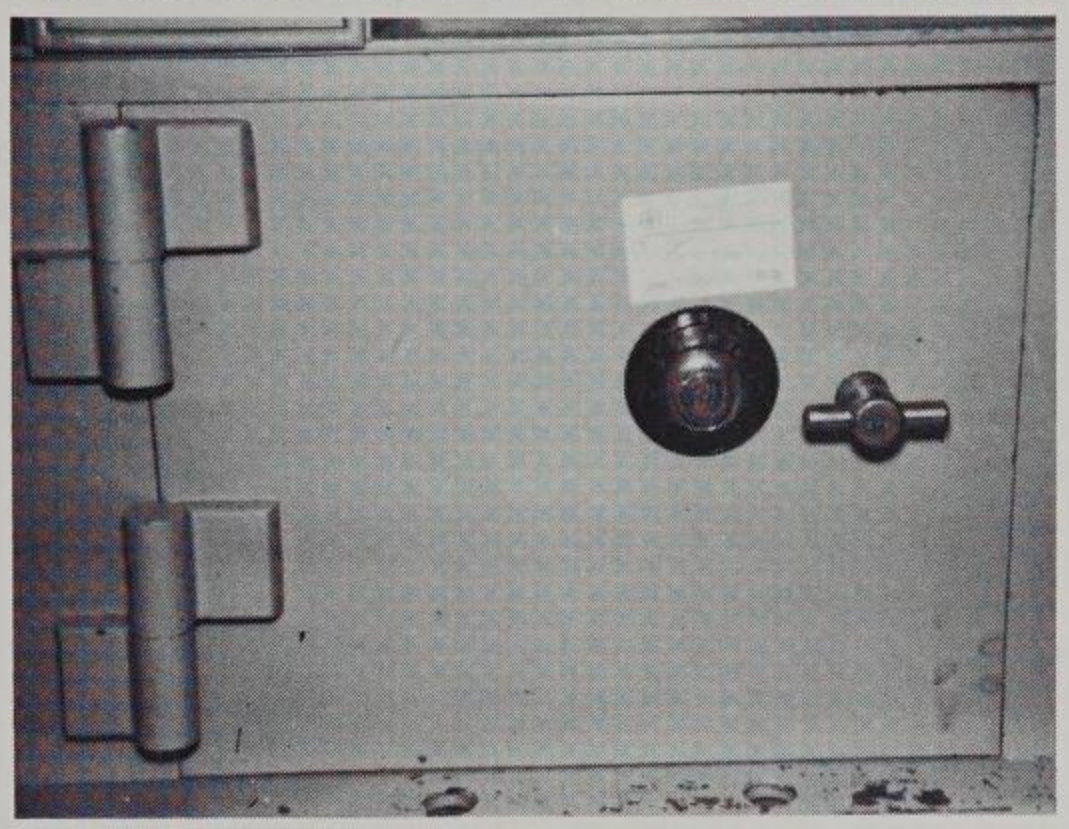


11. Dual custody square door chest.

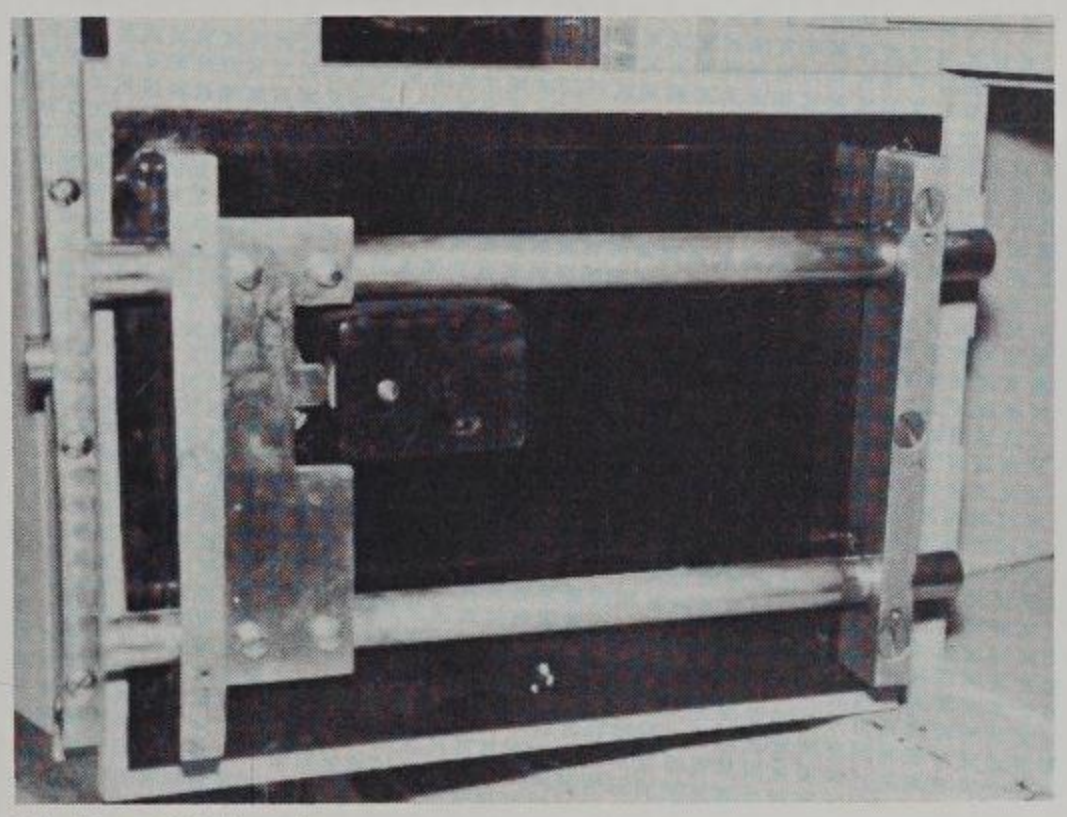


12. Pair of iron case roller-bolt locks.

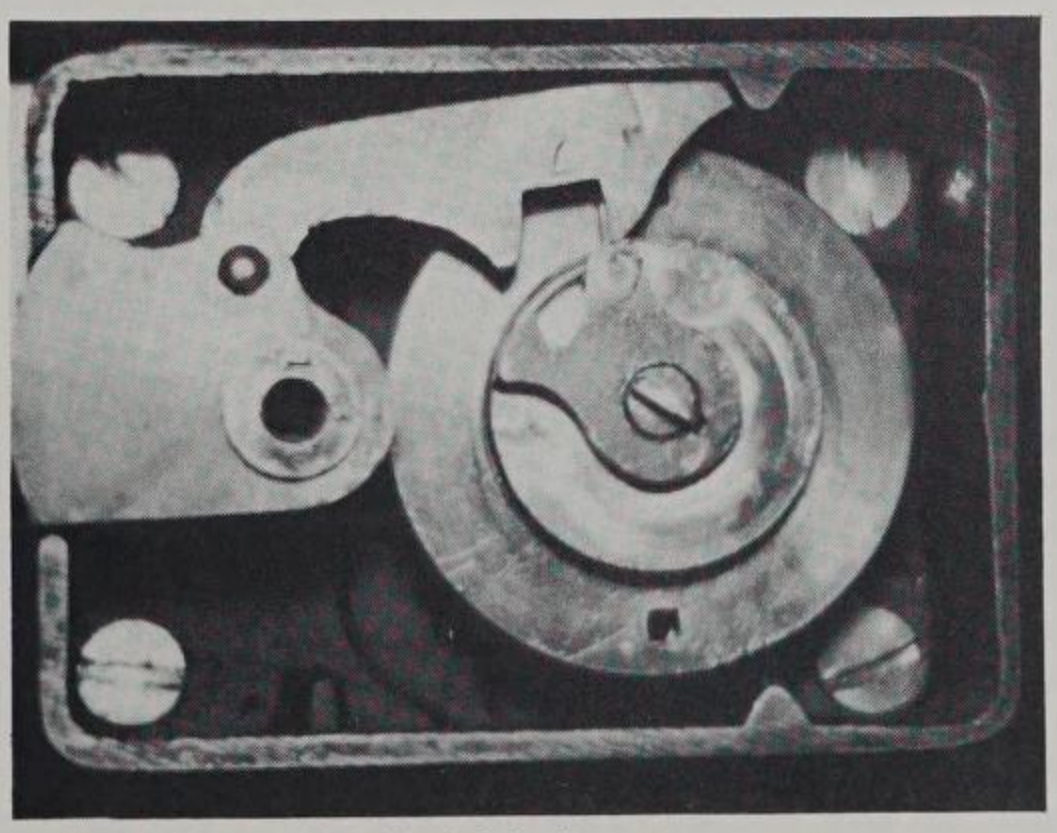
An old left hand swing, square door chest is featured in photograph 13. The block hinges, Sargent & Greenleaf dial and ring, and plain looking T-handle don't give us much to go on from the outside. On the inside the set-up is straight



13. Unidentifiable left hand swing, square door chest.



14. True left hand...



15. ...S & G 6800 roller bolt lock.

ahead and simple. A true left hand Sargent & Greenleaf #6800 roller bolt lock is used to check movement of the boltbar. (*See photographs 14 and 15.*) I have no idea—do you? ■

The Herring Grasshopper Safe

"My current preoccupation was with finding a Herring Grasshopper, but my chances of finding one over the weekend were like my chances of bowling a 300 game."

by Dave McOmie

One of the things I enjoy most about traveling is having the opportunity to visit local safe dealers in each city. This has been a great way to meet and make new friends with whom I share a common interest, and it has also been a source of my continuing education.

One thing I have learned, that continues to amaze me, is that brand names often change radically from region to region. In Philadelphia, for example, I saw my first (second and third) Stiffel & Freeman. In Denver I saw more Aanon safes on one particular dealer's floor than I had seen in my life. Ditto Cleveland and their homegrown Guardian safes. On the west coast we have quite a few Herman safes still in use; these are virtually unheard of east of the Rockies. The list goes on and on.

Another thing I enjoy, but don't get to do often enough, is to run on safe jobs with local safemen. There are several reasons for this. Most of the time I am in too darn much of a hurry, and it's usually on a weekend when most safe companies are closed.

Well, my recent trip to Cleveland was a pleasurable exception. I was in a nearby town and phoned my good friend Skip Eckert, who is *the* safeman in Cleveland, to see if he was free for the weekend. He was, and invited me up to stay with him and his beautiful wife, Connie.

In the course of our conversation, he asked what my favorite lock was, that maybe he could find one for my collection. I replied that my present preoccupation was with the Herring Grasshopper lock, and that he would likely bowl a 300 game and shoot a hole-in-one before he would find a grasshopper just laying around. I was in for a pleasant surprise...

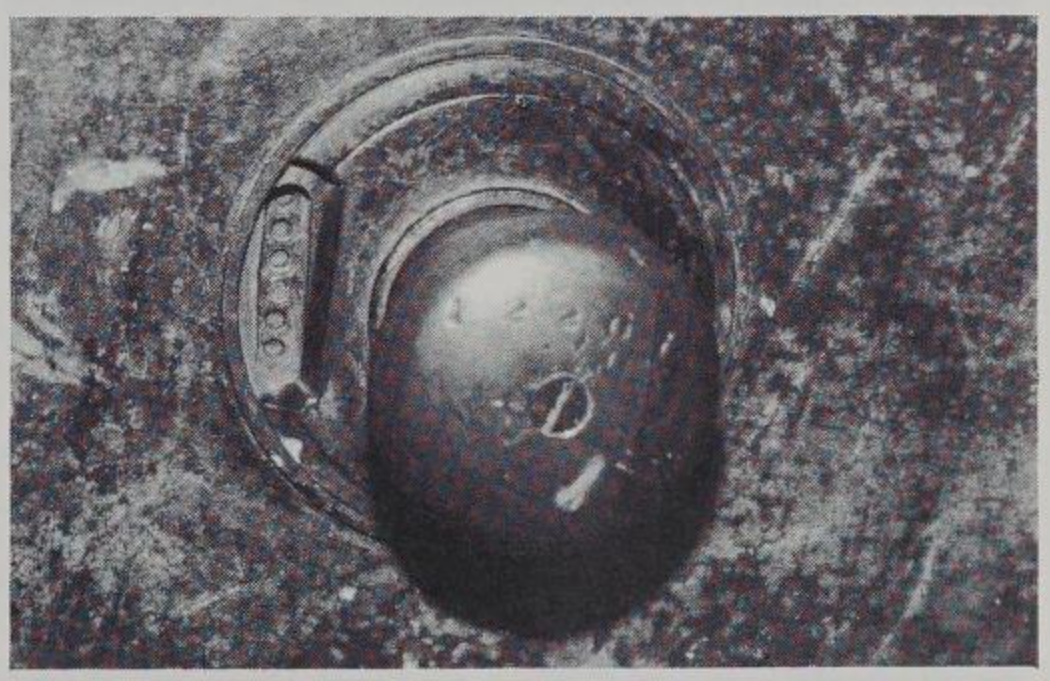
I first met Skip at the 1987 ALOA convention in Dallas, where he captured the World Championship of Combination Lock Manipulation. Both of us being independent safemen, guitarists, and former wrestlers, we had a lot in common and hit it off right away. After a year of corresponding by mail and chatting on the telephone, we were looking forward to meeting again.

Skip's directions were perfect, and I arrived at his home on time, without a single wrong turn (a rare feat for me, especially in a rental car in unfamiliar territory). Greeting me at the door, he was grinning broadly and proclaimed that not in a million years would I guess what we had lined up to open in the morning. Shades of Earl Anthony and Arnold Palmer, a Herring Grasshopper! And what's more, the owner was willing to part with the lock after the rusty old safe was opened; he just wanted to make sure the "Mother Lode" wasn't inside before he scrapped the safe.

Skip and I spent the remainder of the evening talking shop and picking each other's brains, which were getting pretty scrambled by 2:00 a.m.

Up bright and early, we had our Saturday morning tea, and went out to meet the Herring. We found ourselves in the basement of a home on the west side of Cleveland, admiring the century old safe we were about to plunder.

Photograph one shows the distinctive doorknob type



1. Herring Grasshopper's distinctive door knob type handle.

handle of the grasshopper lock. The key (if you have one—we didn't) goes in the oblong slot to the left. More about this later.

Neither Skip nor I had ever opened one, but I had taken enough grasshoppers apart to know the sweet spot. Pulling the drill point from memory, I drilled right for the fence, as shown in photograph two. Looking in the hole with a flexlight, I could see that for once my memory hadn't failed me: the hole was right on the money.

I was about to angle a long, small, bent pin punch into the hole to knock the upper and lower parts of the staked-on fence loose from the boltbar, when Skip asked if there might be a better way. If at all possible, he wanted the lock that was destined for my collection to be an undamaged specimen. Good point, I thought to myself, and sat back on my haunches.

Over a cup of coffee, graciously provided by the owner, Skip and I took turns peeking in the hole with his miniscope, and we put our heads together to come up with another way. We succeeded marvelously.

It meant drilling three more holes in the door to give us access to all six levers, but would leave the lock untouched. What we did is as follows: With the scope inserted in the original hole, one guy observed the levers and fence while

2. Dave McOmie drilling for the fence.

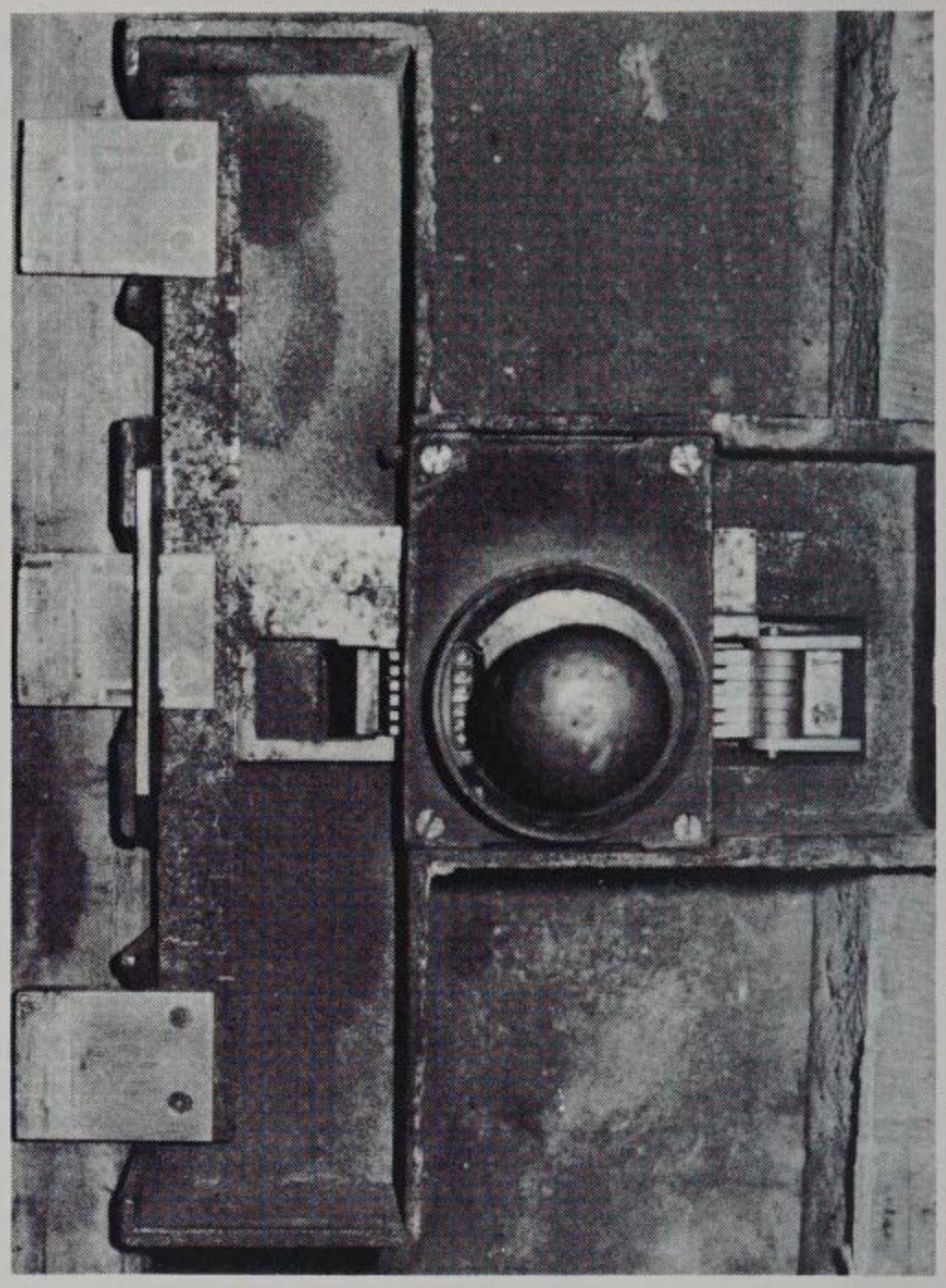
picking, pushing, and prodding the levers through the three vertically drilled holes. At the same time, the other guy was holding clockwise pressure on the handle, to keep the fence pressing against the levers. This is exactly what we are doing in photograph three.

3. Two man opening procedure using four drilled holes.

Extremely tight gates, and multiple false gates gave us fits for about 30 minutes. But after trading places twice, and sipping coffee thrice, by George we got it. It was the first Herring Grasshopper opening for both of us, and we were thrilled; much more so than the dejected owners who found the safe disappointingly empty.

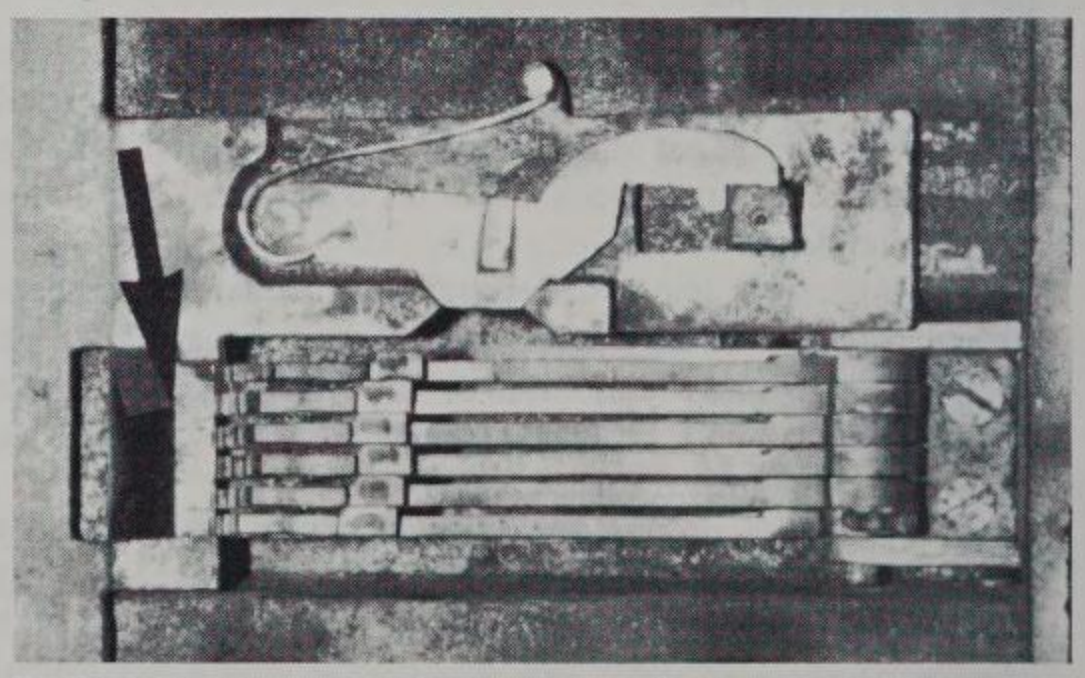
The next step was to remove the lock. The fire clay had to be chopped out, the tin cover removed, and a little grinding and hammering loosened it right up

The whole thing—lock and boltwork—comes out together as you can see in photograph four.



4. Grasshopper lock and boltwork removed from the safe body.

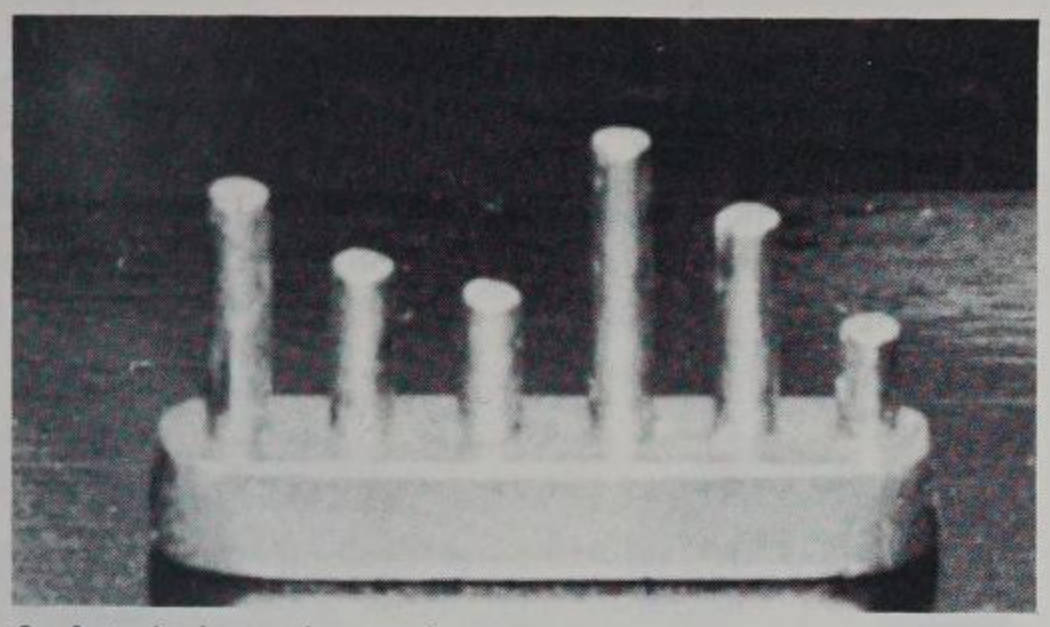
In photograph five I have removed the knob assembly to give us a clear view of the levers and the fence. This six levers are mounted sideways in the lock. The arrow is pointing to the fence. I believe the little dots on the middle of each lever correspond to the depth of each gate.



5. With the knob assembly removed, the levers and fence are exposed. Note the fence indicated with an arrow.

Photograph six is of a grasshopper key. (Although we didn't have one, I included this photograph to complete the article). Each of the six little pins on the key operates their own individual lever in the lock. As is obvious from looking at the key, the depths ranged from shallow to very deep.

If I had a grasshopper to open every week, I would make a pick key for the lock, as follows: Instead of using six pins, tap six holes and thread in six small machine screws. Now it takes only one hole to open the lock. Insert the pick key, look through the scope and turn each screw down until each gate is lined up at the fence. Cut or grind off the screw heads and turn the handle. Bingo, the safe is theoretically open.



6. A typical grasshopper key.

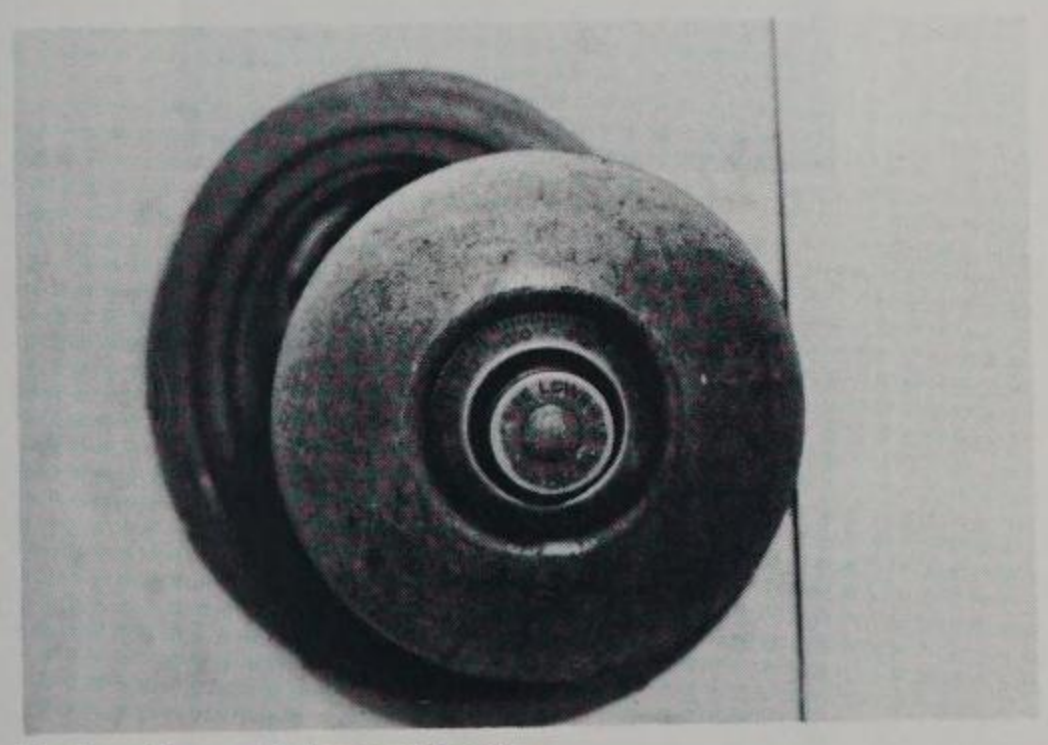
This trick has circulated for years, but I am yet to meet anyone who has actually used it. If you have, or know anyone who has, drop me a line; I'd love to hear about it.

Oh, by the way, the reason they call this the grasshopper lock is because the levers are under considerable spring pressure, and when the knob is turned back to neutral the key is ejected forcefully, jumping out of its slot as a grasshopper would. Cute, huh?

Before we finish this one off, here are a few informational tidbits: The grasshopper lock was patented on August 1, 1848 by W. Hall. Whether this is the same W. Hall that founded Hall's Safe and Lock I can't say for sure, but it seems likely. Yes, there is a hardplate. The knob turns clockwise to open. No, the key cannot be locked inside; it must be used to lock the safe.

After lunch we climbed back in Skip's Astro Van and his pager went off. The job was confirmed and away we went, to the other side of Cleveland.

This time we were upstairs looking at the Lowrie round door wall safe shown in photograph seven. The owner *insisted* it be opened without drilling, so we manipulated in shifts of five minutes each. Suddenly, a hilarious idea popped into my mind. I told Skip that since the safe (of course) was going to come open on my shift, that I was going to have a little fun.



7. Lowrie round door wall safe.

My plan was to proceed back to Skip's place, go over to his World Champion Manipulator plaque, put masking tape over his name, and felt pen in my name. A photograph of me standing by my new plaque would have looked great on these pages, and been good for a few laughs; but, as with some of the best laid plans, a problem arose.

The problem was that, unfortunately, the safe didn't come open on my shift. It (of course) came open on his shift, and in all honesty I have to admit that in all likelihood this was no coincidence. (Incidentally, for those of you who haven't heard, Skip retained his title at this years ALOA convention with a world record time of 3 minutes 57 seconds! Congratulations, Skip!)

Photograph eight shows the reigning two-time World Champion showing his world class style shortly before the safe came open.

8. World Champion manipulator, Skip Eckert, at work.

Photograph nine shows the extended hinge with Lowrie's name on it. To the general public, S & L means Savings & Loan, but us enlightened folk in the Safe & Lock industry know better, don't we!

9. Extended hinge with company name stamped on it.

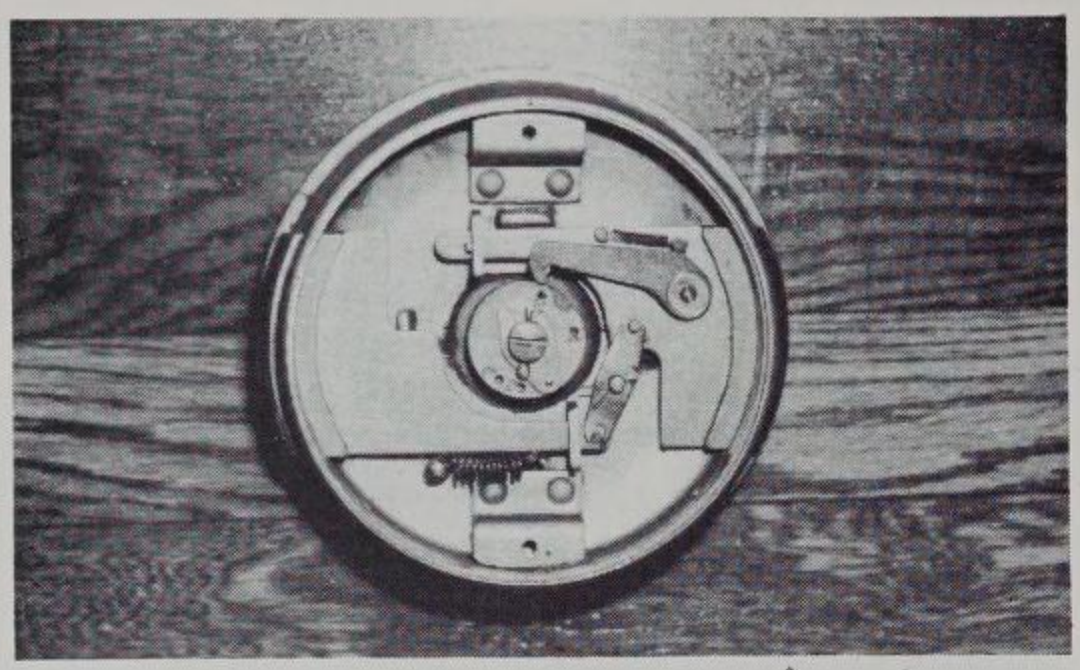
In photograph 10 the back plate has been removed. There are three wheels and a rear mounted driver; drop-in is on top; and there are two long, flat spring loaded locking bolts; one at 3 o'clock, one at 9 o'clock.

The wheels are mounted right under the outer skin, so angling in for a direct read is not feasible. Stay outside the dial, and pop a borescope hole through the door anywhere between 15 and 20. This area is wide open.

Skip collected from the happy owner, and we headed back to his home. We were nearly there when BEEP! BEEP! BEEP! off went his pager again.

After going to the wrong place—where we were viewed with suspicion when we informed them we were there to work on the safe—we finally got the right address, and were immediately escorted back to the culprit shown in photograph 11.

Obviously a Gary square door, but one look at the position of the handle told me it was not the usual Gary we are

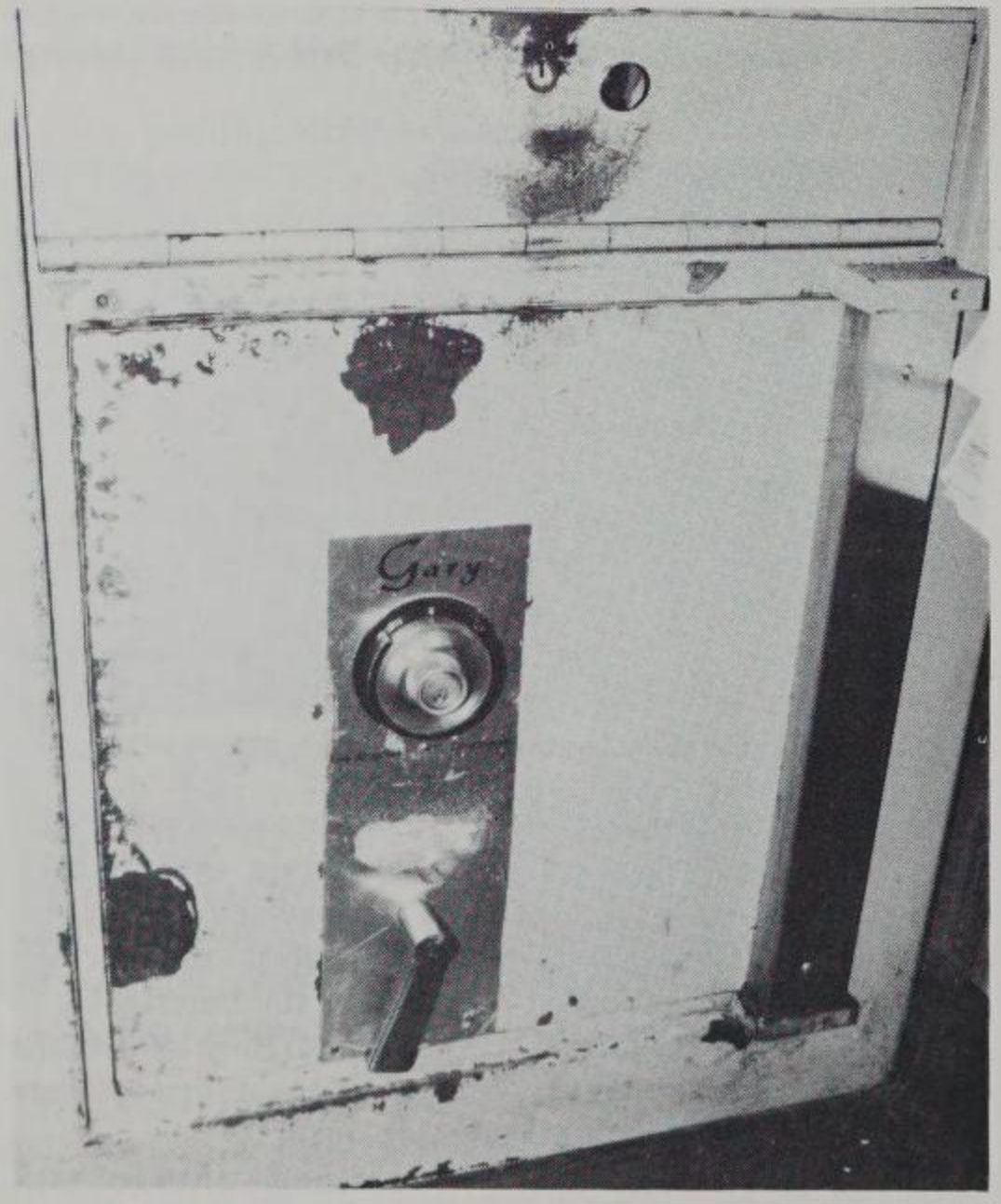


10. Lock shown with back plate removed.

used to seeing. The handle being mounted so low, and the distance from dial center to handle center being a couple of inches more than usual, were the two clues that told me this was a two-stage boltwork type door manufactured in the late 70s.

The symptoms: the combination could be dialed, the lockbolt retracted, and the handle would turn a full 90 degrees, but the door would not open.

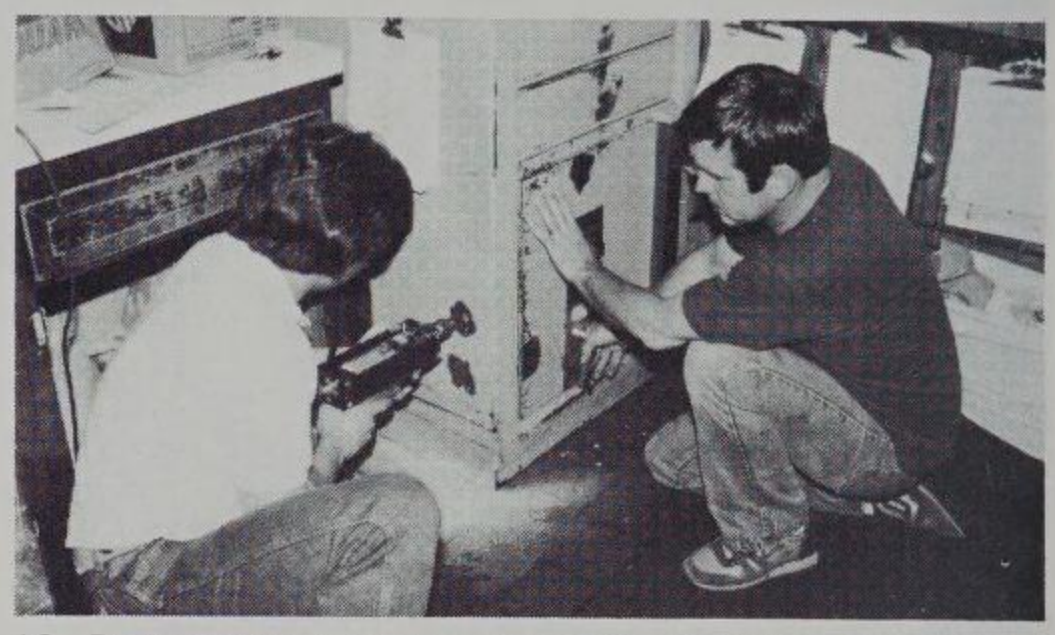
Neither Skip nor I were sure enough to pronounce with anything approaching absolute certainty what the problem was, but we agreed that there was a disconnect somewhere. So we decided to put a hole in the side.



11. Gary square door safe. Note low handle mounting.

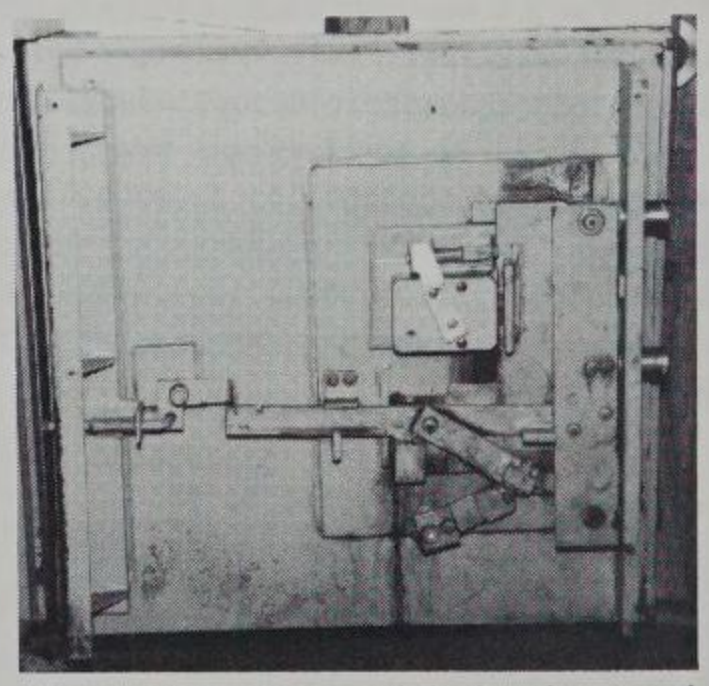
I have a lot of "rules of thumb" that I fall back on if I don't have a particular drill point with me. One of these, that applies to many TL-15 type square doors, is to look for the center bolt in the horizontal center of the door, at a depth of 2½".

In photograph 12 that is exactly what we are doing. I looked in the hole, saw the edge of the center bolt, and as luck would have it, this was the bolt that had become disconnected from the boltbar. Skip turned the handle, which lifted the anti-punch blocks from behind the locking bolts, and I pushed the free-floating center bolt back. The safe was open.

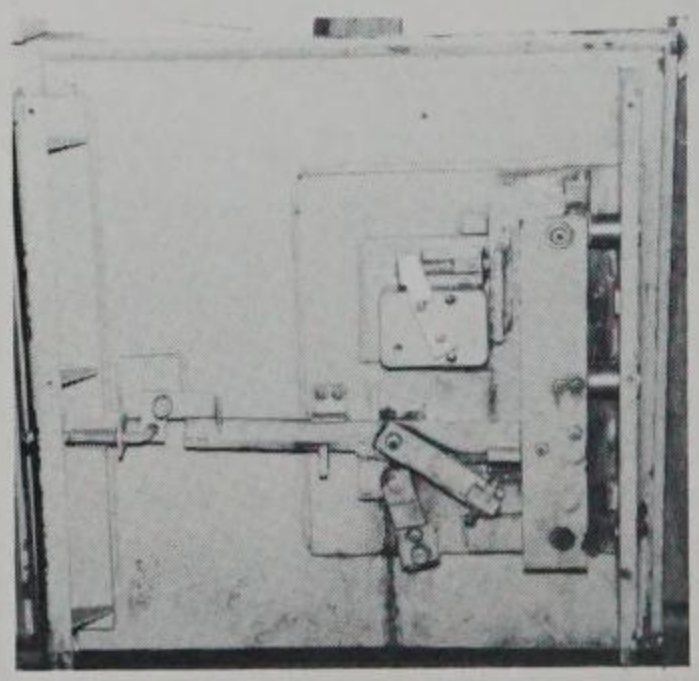


12. Dave drilling for the center bolt in the horizontal center of the door.

Photograph 13 shows the inside of the door with the back panel removed. Notice the lock is mounted RH instead of the usual VD. The external relocking device is mounted above, and parallel to, the lock. There were originally three locking bolts, but the lower one had been drilled in half and removed after a previous opening (don't ask me why—I don't know).



13. Inside door with back panel removed. The lock is mounted RH.



14. Safe door with locking bolts retracted in an unlocked position.

In photograph 14 the locking bolts have been retracted, the safe is in the unlocked position.

After examining the safe, it becomes easy to understand why Gary discontinued this model.

Back at Skip's place, we had a late supper and reviewed the day's events as we ate. It had been one fun, whale of a way to spend a Saturday. The grasshopper was packed away, my camera was full of great pictures; it felt like Christmas. But sadly, it was time for me to go.

My sincere thanks to Connie and Skip Eckert for their gracious hospitality. Fine hosts, good friends, fine people. I will remember my stay in Cleveland for a long time to come. ■

My good friend Skip has gone beyond combination lock manipulation to the high art of compromising high security lever locks. He and Phil Shearer are two of the few cracksmen on the planet to possess world-class skills on both comb-locks and keylocks.

Safe Drilling Techniques

"Medical Diagnostic Services offers a series of long scopes that can be purchased separately and be used as add-ons to the thousands of MDS kits already in use."

by Dave McOmie

Judging from letters I have received, and conversations I have had in recent months, there is a growing interest among safemen in making side and top penetrations. Along with the interest, there also exists a general sense of apprehension. This is understandable, as more knowledge of the container is required as are more and specialized tools.

Here are five questions that ought be asked before attempting a lateral or top penetration:

1) *Am I dealing with a lost combination or a malfunction?* Malfunctions that cannot be overcome by trouble-shooting are generally best attacked through the door unless glass plates are present.

2) *Do I know the exact drill point?* Attempting a lateral penetration without knowledge of the lock mounting position and depth to the lock (critical) can lead to trouble. Don't ask how I know all about this.

3) *Will I be drilling through the boltbar or any other obstruction before I get to the lock?* If for nothing else but piece of mind and confidence, I like to know what stands between me and the lock. Believe me, this one makes a guy even more conscious of construction.

4) *How difficult will it be to make a cosmetically acceptable repair?* This will vary from safe to safe. A beat-up, chipped-up old safe does not require the level of perfection in the repair that a new or beautifully restored safe does. Also, don't tell your customer that the repair will be invisible unless you mean it. Not many of use can boast body shop level expertise.

5) *On balance, is this approach actually advantageous to drilling through the door?* Bypassing tough hardplate, or saving an expensive or obsolete dial are good reasons for an alternate approach.

Now let's turn our attention to the equipment needed to do the job right. This will vary from person to person. I know guys that can hand drill straight as an arrow through foot thick claddings, but many of us need help when a straight hole through a thick wall is necessary. You might consider a fixed drill rig, such as the Magnum 357, or the Penetrator. Either one will do the job nicely.

Long drill bits are essential to attain depth of penetration. I stock lots of ¼", ⅜", and ½" high speed bits in various lengths up to 24".

Carbide bits are usually only necessary when penetrating a six-sided container, and in these cases 8" bits will get you through the wall with room to spare.

I've saved the most important piece of equipment for last: a long borescope. You can do amazing things with a long scope. Put a small hole in the lockcase and you can read out the combination, or peek through the change-key hole and you can do the same thing. Quite often the construction of each individual safe will dictate which of these two methods ought to be used. For example, if you are going to side-drill a safe, and if there is a keylock or a handle mechanism blocking the direct path to the lock, put your hole farther back, missing the obstruction and go for the change hole.

For many technicians, the intimidating factor in purchasing a long scope is the price. The guy opening safes every day can more easily justify a $2,500 (minimum) investment in long scopes than can the general locksmith who opens only one or two a month.

With this factor in mind, Paul Butler of Medical Diagnostic Services (MDS) went to the drawing board. Paul came back with a series of long scopes that can be purchased separately, and be used as add-on accessories to the thousands of MDS kits already in use. This is great news. It means that those of you who already own an MDS or Focuscope system, can add a long scope to your kit for a fraction of what it would cost otherwise.

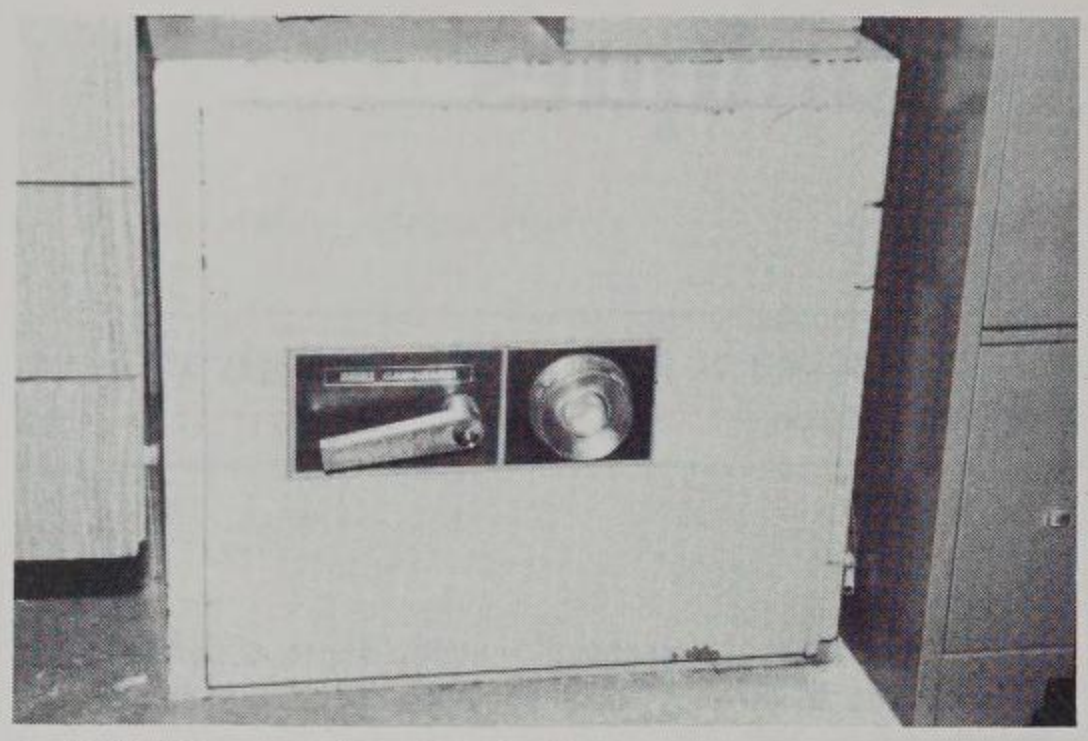
These long scopes are available in the two-component system everyone is familiar with (a straight-view fiber optic probe and a mirror tube), or as self-contained one-piece probes.

Paul sent me a one-piece 90° probe, a power handle, and a 30 watt light source to evaluate.

Now I have an intense dislike for laboratory type product reviews, where the reviewer merely describes the product, paraphrases from product literature, and offers educated guesses as to its capabilities. I much prefer subjecting a new tool to the rigors of the workplace, where it can be evaluated based on the only performance that really counts: *on the job.*

It was a short wait for a suitable guinea pig to come along. My good friend Neal McMahon, owner of Emergency Locksmith Services called on me to open the Diebold square door money safe shown in photograph one.

As you can see from the escutcheon plate, it boasts the name "CASHGUARD," which tells us very little, as Diebold has tended to use the label somewhat indiscriminately.



1. Diebold square door money chest.

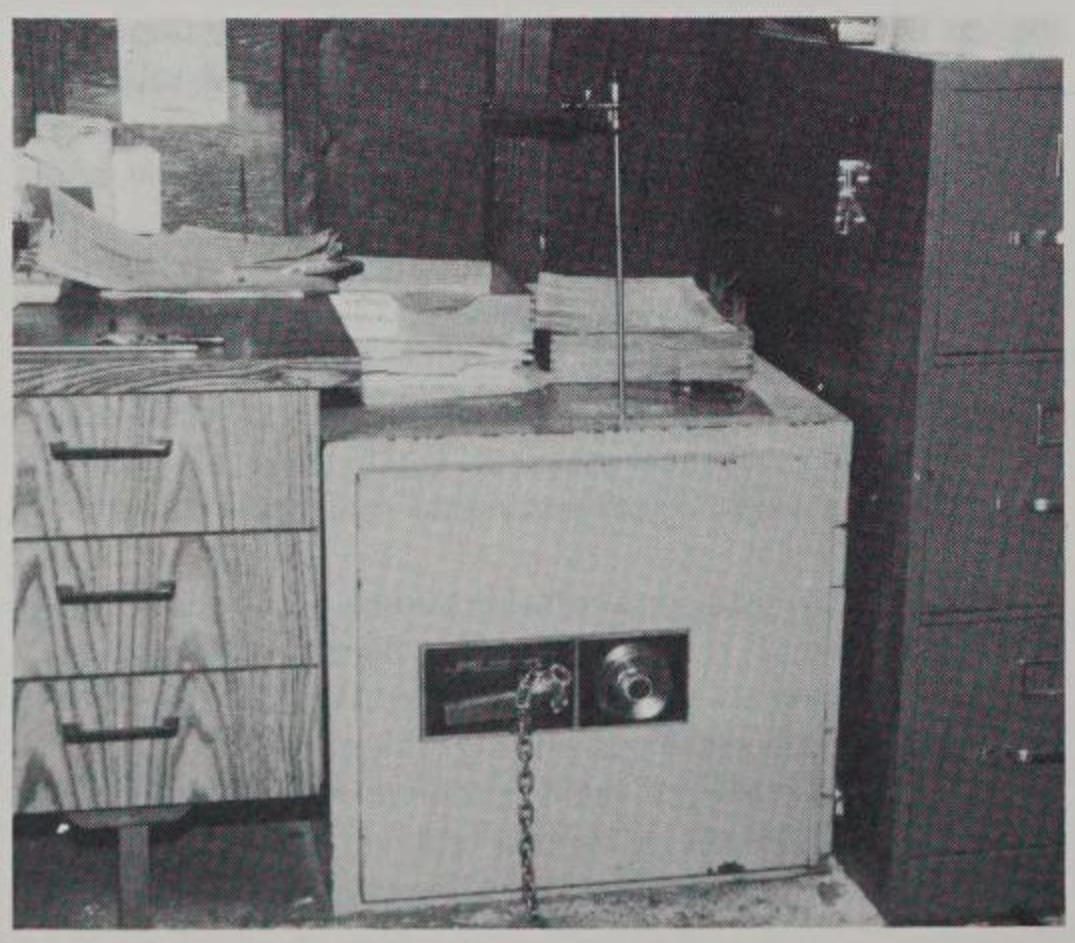
The simplest, most reliable way to tell the various modern Diebold square doors apart is by the position of the handle. Not by the distance between the dial and handle—this stays constant (about 4½″) between models—but by the distance from the handle to the opening edge of the door. A simple rule of thumb, which covers all but a few minor exceptions, is as follows: if the distance from handle center to the edge of the door is less than 6″, the lock is mounted RH; if this distance is in excess of 6″, the lock is mounted VD.

I knew from the way the door overlapped the body that this was a dual-purpose container, both fire and burglary resistive. And wouldn't you know it this was the only model of which I lacked the door thickness measurement.

Even without this measurement I felt justified in making a top penetration. I wanted to save the Diebold dial (¼″ spindle); bypass the hardplate; and most important, I had a deadline to meet.

As I explained, I wasn't sure how thick the door was, so let's call my first hole an "exploratory hole," which is actually a euphemism for a miss. Well, after one more exploratory hole I hit paydirt. In photograph two, the long 90° MDS scope has been inserted into the hole; and I was trying to find the change hole when I took a break to snap this photo.

Finding the change key hole was a little tricky. Once I found the little bugger it was smooth sailing from then on. I wrapped a wad of tape around the scope right at the hole to mark my depth, and also to relieve the gravitational pull which was making my arms feel like lead.



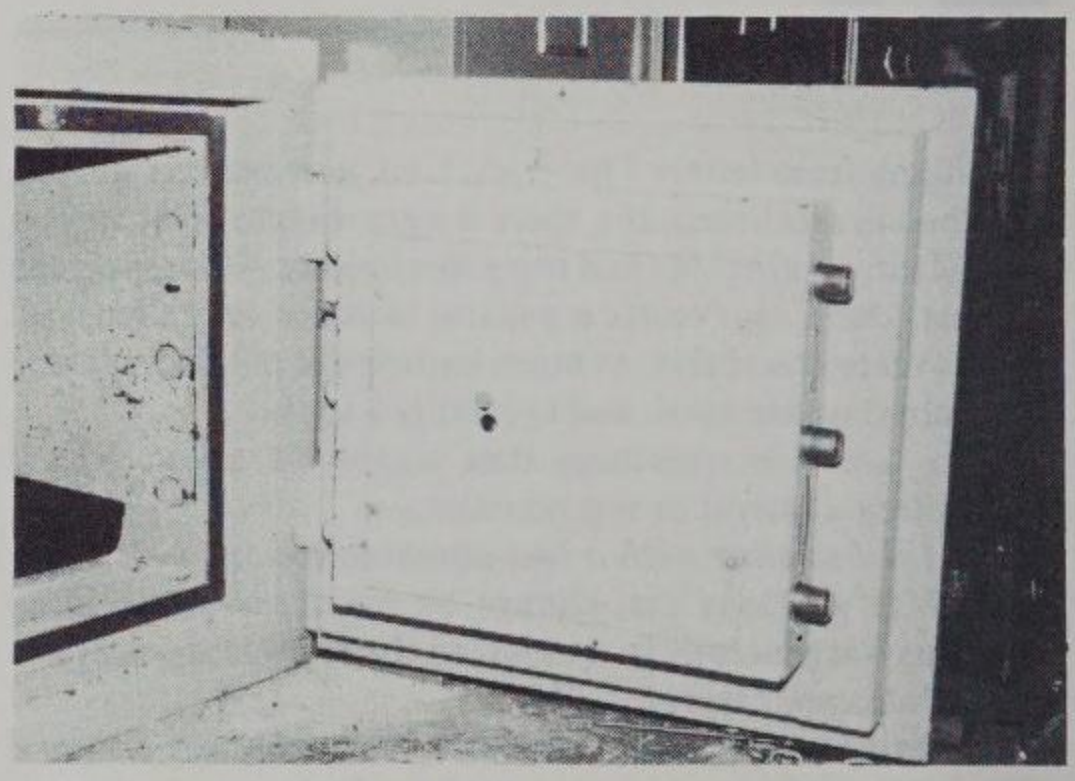
2. The 90° MDS Scope is shown in the hole, used to find the change hole.

Seeing the wheels through the change hole is a beautiful sight, and at this point, rather than mumble through the step-by-step procedure of opening the lock, let me just encourage you to try it on a mounted lock using a penlight. It's really not that bad.

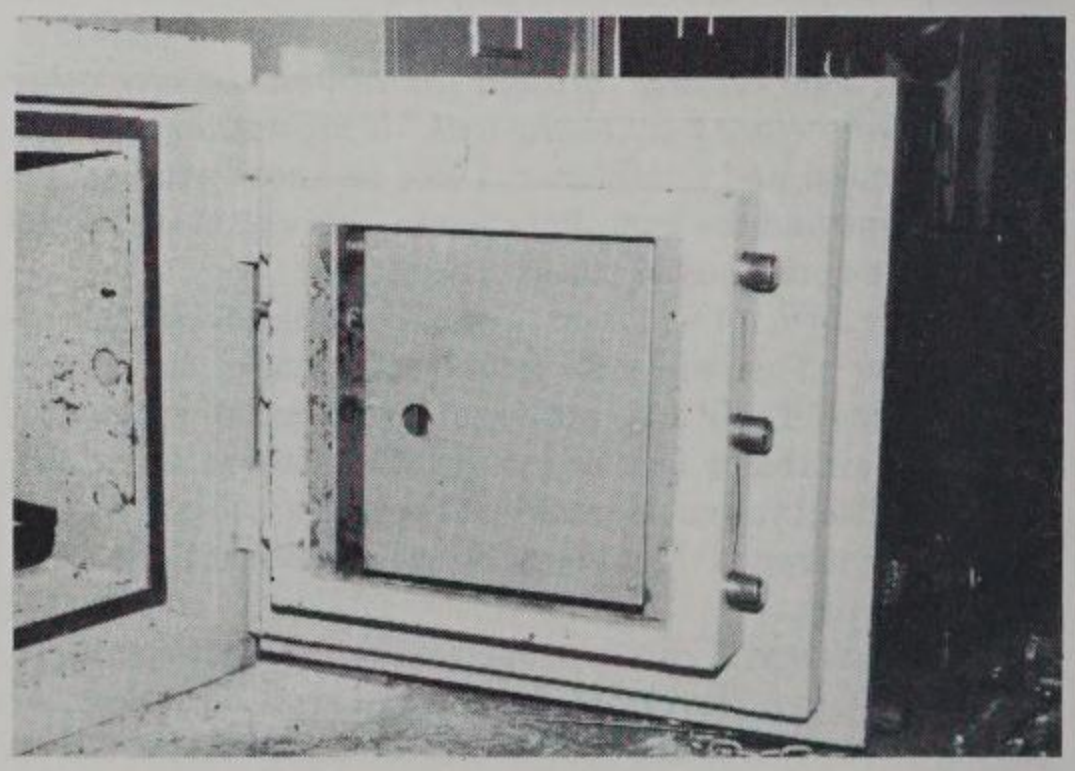
A couple of helpful hints: carry the wheels 5 numbers at a time, and look for anything from which to get your bearings—a gate, a change hole, balance holes, etc. Remember (as I did not) that in a zero-change lock, the gates and change holes are not 50 numbers apart. You can figure it out.

I turned the handle clockwise about 80°, the door swung open, and photograph three was taken. The three locking bolts are clearly visible here in the locked position.

In photograph four the back panel has been removed, exposing yet another panel I call the "carrier panel," since it is used to carry the top and bottom bolts.



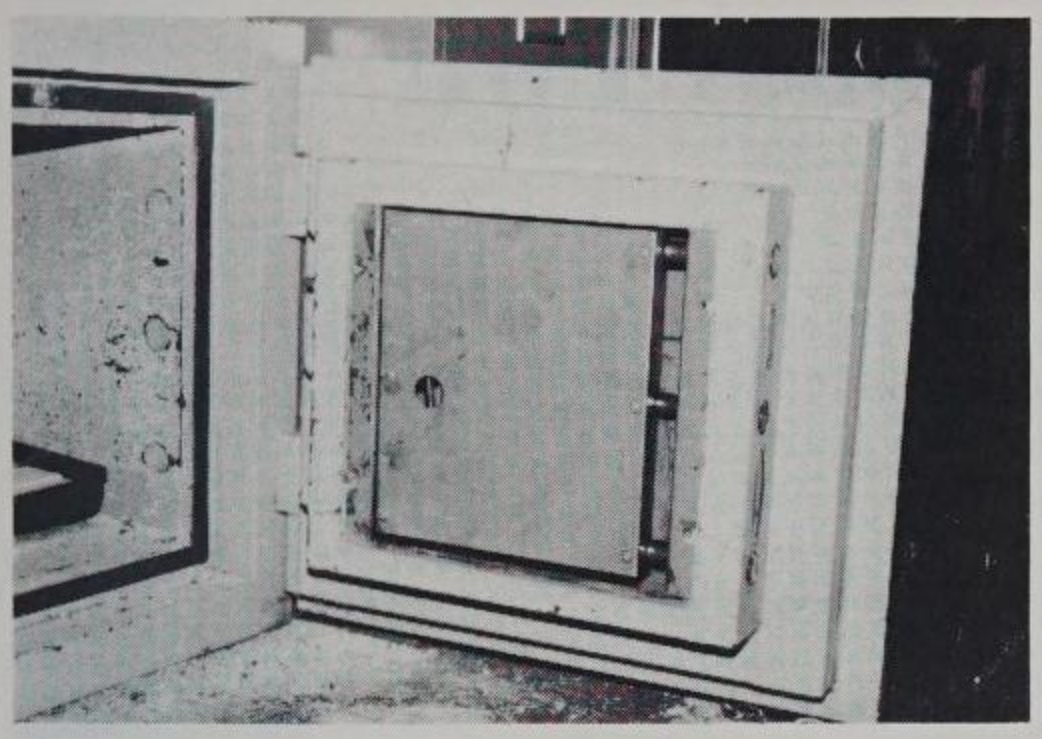
3. The opened chest with bolts shown in the locked position.



4. Chest with the back panel removed, exposing the "carrier panel."

In photograph five the handle has been turned, the bolts retracted. Let me explain how this works. The handle mechanism controls only the center bolt. The center bolt is hooked onto the carrier panel, as are the top and bottom bolts; and as long as the carrier panel is in place all three bolts move together.

But when the carrier panel is removed, as in photograph six, the spring loaded top and bottom bolts transform into

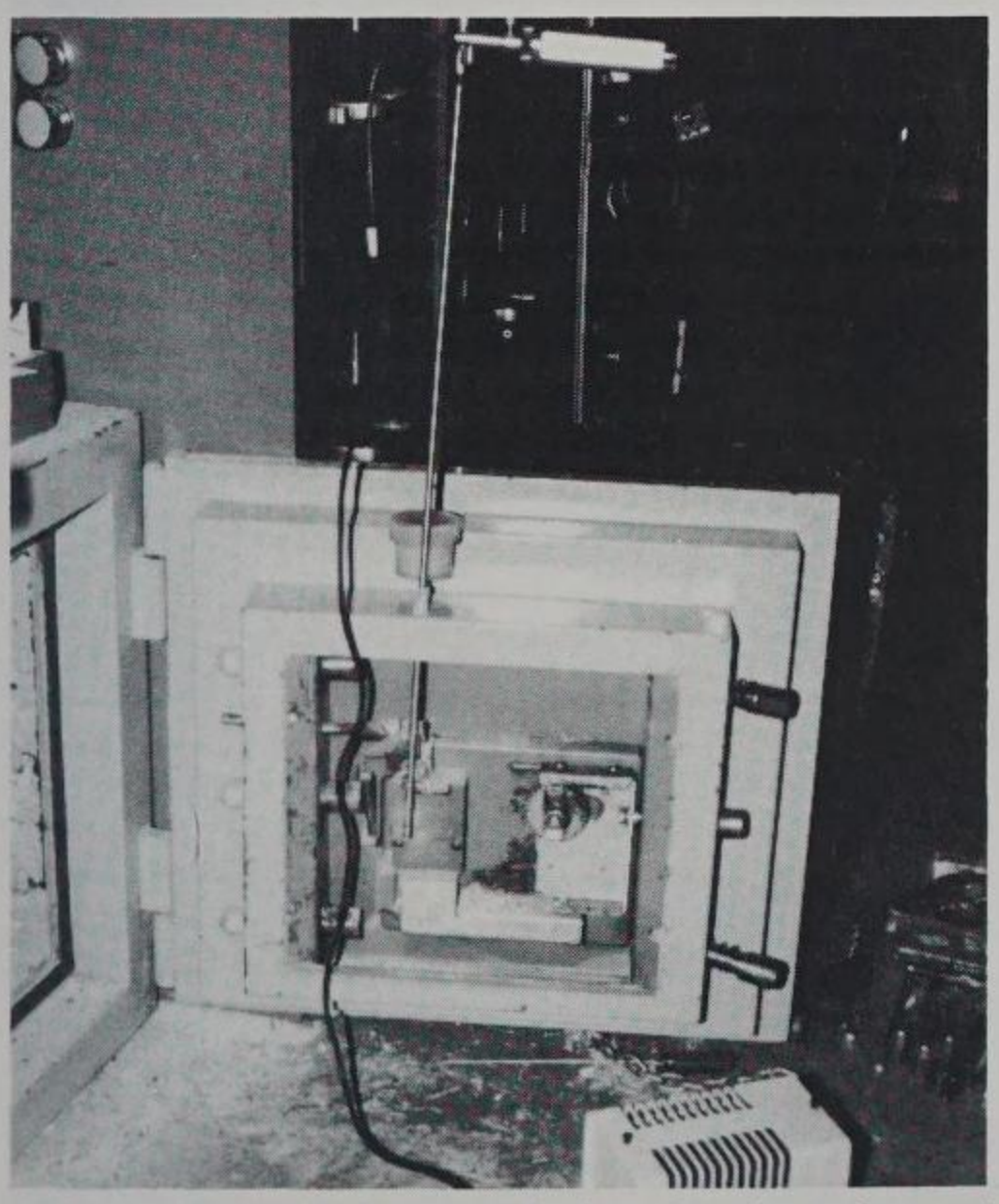


5. Bolts shown retracted after a turn of the handle.

relockers.

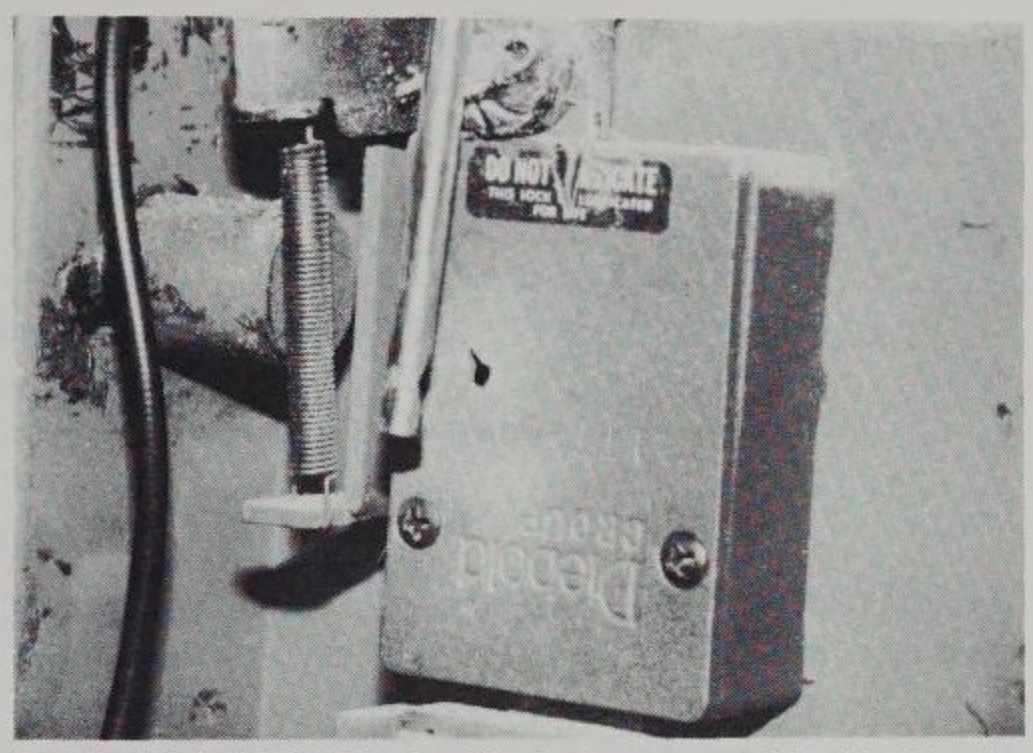
It took some jerry-rigging, but in this photo I have re-enacted the opening. The scope is in position to peek through the change hole, and oh yes, I almost forgot to mention the white box-like thing on the ground. This is the 30 watt light source offered by MDS, and let me tell you, this little guy is a real jewel. Not only does it offer increased illumination for the scopes, it also works great without a scope! The light guide is small enough to slide into small holes, and I use it often for hands-free illumination. This is extremely helpful when you are on a long tedious opening and need light to be shone in the hole for extended periods.

Photograph seven shows the Diebold 177 series lock mounted VD, and the end of the borescope shining its light



6. Top and bottom bolts act as relockers when the carrier panel is removed.

on the change key hole. Before it was nicked by a drill, the little sticker on the back cover read, "DO NOT LUBRICATE—This lock lubricated for life." I still chuckle

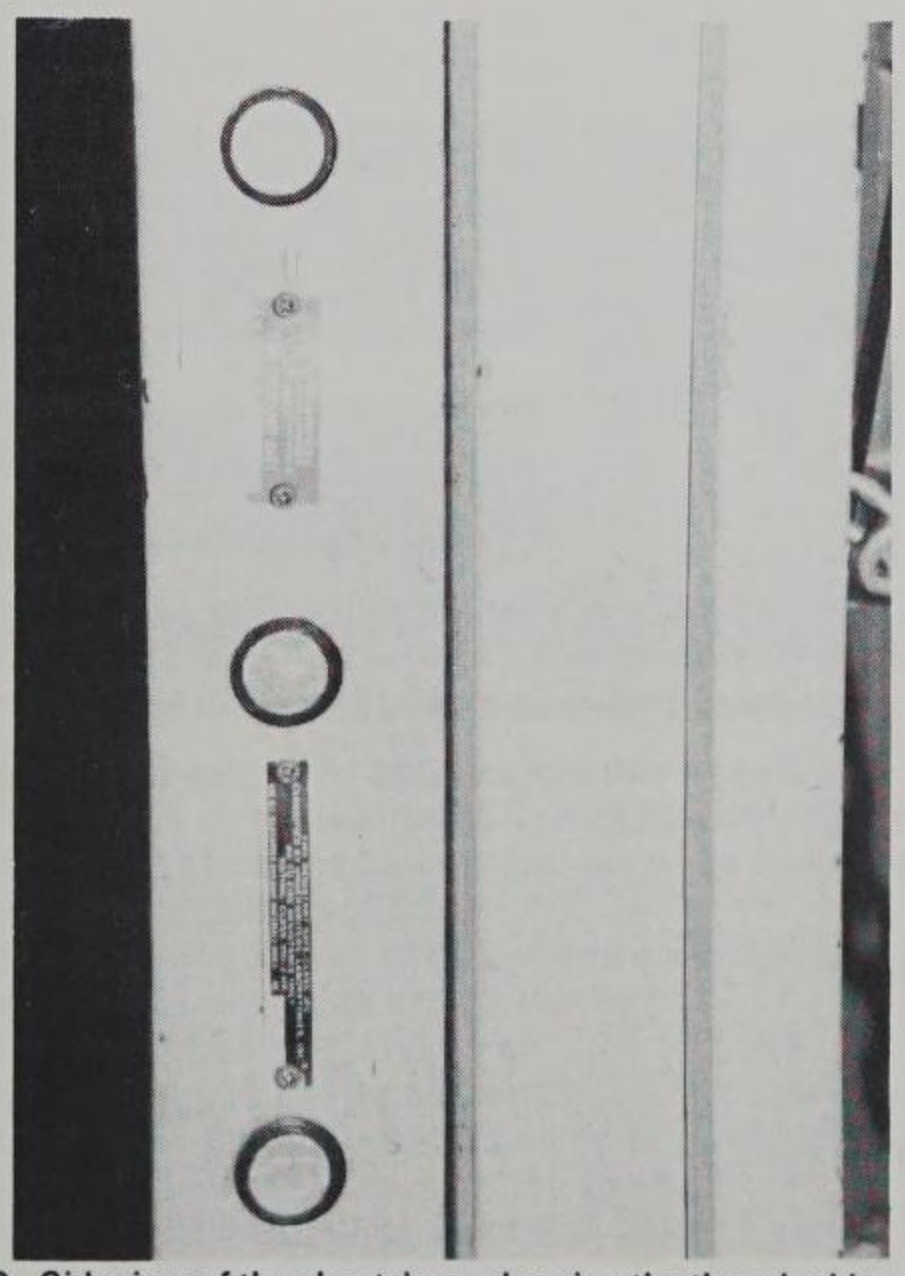


7. The Diebold 177 lock with the borescope illuminating the change key hole.

when I read those labels. It may very well have been "lubricated for life" at the factory, but if we technicians fail to re-lubricate the lock during periodic service, it will definitely have a very short life here on earth! I wonder, is there a lock heaven?

Photograph eight is a side-view of the door. The three locking bolts are visible, as are the U.L. labels designating this a TL-15 tool-resistant safe and a class 350, 2-hour fire-resistant safe. Very impressive. You can see the step-downs in this thick door. For your information, door thickness to lock is 4″; door thickness to bolt center is 4½″.

With the Focuscope system you gain the length needed to reach the lockcase through the side or top of most safes. And equally important, the price is right. I only wish the field of



8. Sideview of the chest door, showing the three locking bolts.

view were a bit bigger. I give the MDS long scope a thumbs-up for being cost-effective.

For more information contact: MDS, 1640 Central Ave., St. Petersburg, FL 33712, (800) 537-2790. ■

An Evening With Intersec

"Most of the time I follow a ten minute rule for fire safes, but this safe seduced me into more than an hour of manipulation before I finally reached for my drill.

by Dave McOmie

The contemporary axiom by which most safemen are guided is the provocative "manipulation before penetration." Though it is recognized immediately as a double entendre, we will confine ourself to examining the less prurient of the two.

The only real question is how much time to give the unsure before yielding to the sure, or, in other words, how much time to manipulate before deciding to penetrate. This is a tough question, and individual judgement will vary from safe to safe.

The natural tendency is to allot more time to safes that are difficult to penetrate. For example, it surely makes sense to spend more time attempting to manipulate a John Tann, than say, an imported fire safe.

Most of the time I follow my own 10-minute rule for fire safes, but the subject of this month's article seduced me into more than an hour of manipulation before I finally reached for my drill. I can't say I was drunk (that's no excuse anyway), but in my own defense, hey, it was one of those nights. Here is how it happened...

Walking into the showroom at Northwest Safe Co. one musky autumn night, I was introduced to the statuesque, six-foot charmer displayed in photograph one. I was mesmerized. (Her brand) name, as you can see in photograph two, is Intersec. She sports a lovely five-star dial, a keyed cylinder for dual chastity I mean custody, and a gorgeous, shapely handle.

1. The Intersec safe; full length view.

2. Close-up of the attractive Intersec dial and handle.

I inserted my pick into the keyhole and flipped the cylinder 360° clockwise to the unlocked position. Now I could forget about the keylock and focus my attention on the more interesting features.

I twiddled the dial, and feeling a firm contact point, I just knew the safe was going to be easy. Ha!

Going around the dial every two numbers got me nowhere. Switching to the odd numbers for the next pass got me just as far. The safe was obviously playing hard to get, so I winked at myself and changed my approach.

I used my eye-numbing Read-Eze. Zilch. I got out my contact amplifier to see if the fence was lightly contacting a wheel gate. Zilcho. I toyed with the idea of running out of gas, but settled for parking her wheels, and even that didn't work.

I fiddled and fretted, and caressed and cajoled for what seemed like eternity, but never even got to first base. Oh, a couple of times I thought I had her number (or at least her third number), but it always turned out to be a false wish on my part. She was rebuffing all my advances; I could almost hear her laughing at me.

Then, in what appeared to be a rare moment of clairvoyance, I detected a faraway, mocking voice asking, "I wonder what this geek is going to try next?"

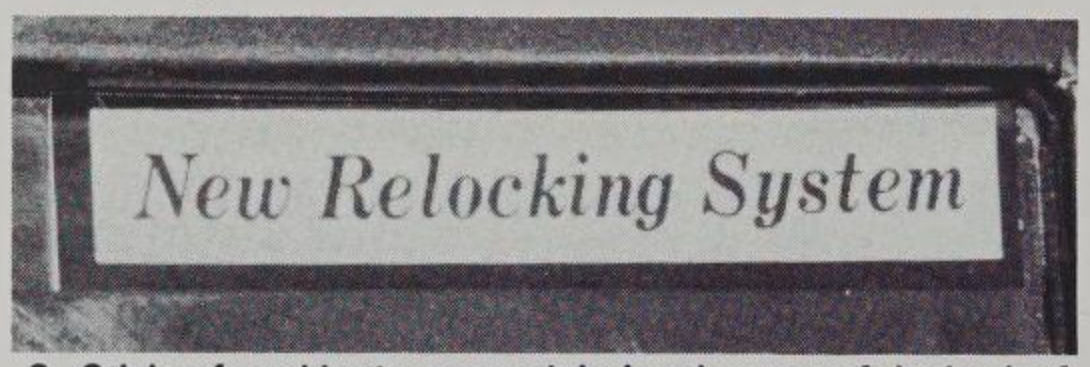
Such an uncultured remark startled me, and it took a moment for me to realize that the voice wasn't being transmitted telepathically at all. Hearing steps from behind, I wheeled around there was my old friend Ken Catchpole, just back from his last job.

Always one to cut through the bull, Ken looked first at me, then at Intersec, and said, "What's the problem Dave, why don't you drill it?"

Well, that was all it took to snap me out of that hypnotic trance and bring me back to reality.

Ken had formulated it right. Intersec was not a *she*, Intersec was an *it*. And an it deserves no special considerations. So with my sense of perspective restored, I got down to business.

A quick walk around the safe revealed the little sticker shown in photograph three. It was in the upper right hand corner in back of the safe. Evidently the manufacturer was so proud of this "New Relocking System," that they decided to advertise its existence in a place viewed only by cobwebs and kinky safemen.

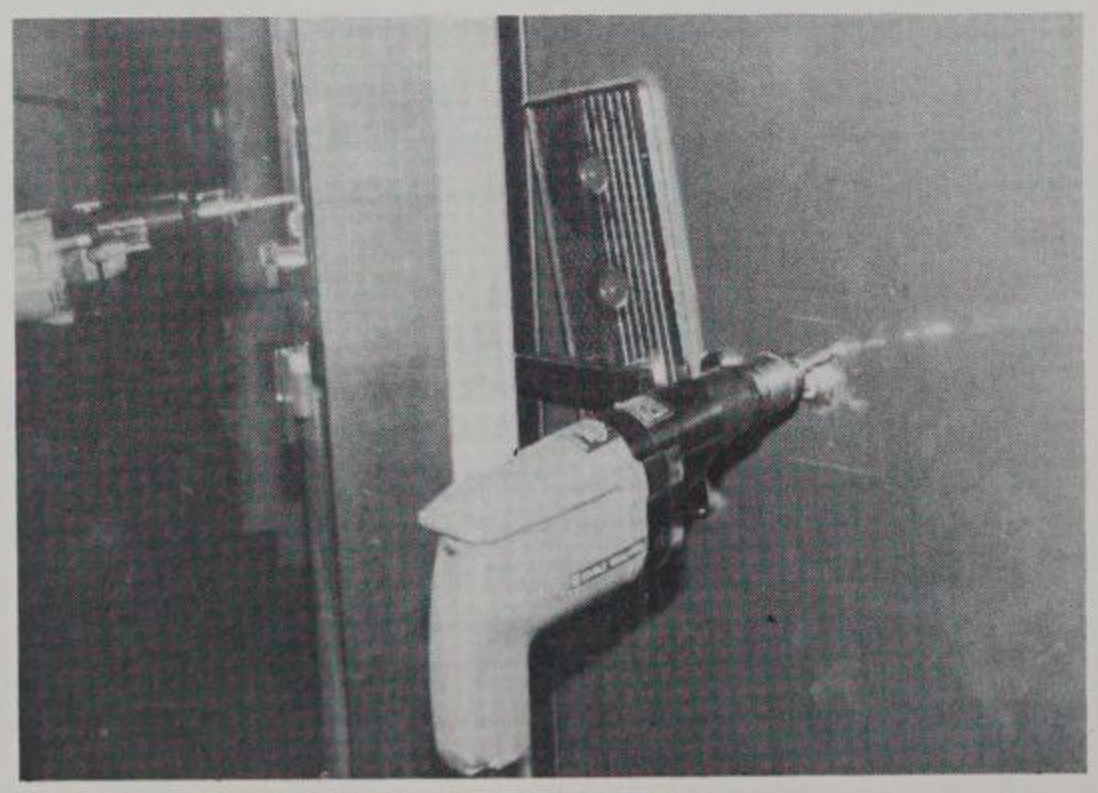


3. Sticker found in the upper right hand corner of the back of the safe.

The dial is pinned on, so I broke it off with a couple of screwdrivers and a hammer. Next, the dial ring, and cylinder ring was removed, allowing the facia plate to swing out of the way.

Looking up the drill point in *The National Locksmith Guide To Safe Opening, Volume II,* I marked and center-punched at 10 × 1¼″.

Firing up the Hornet, I plowed right on down to the hardplate, left the drill in the hole, and snapped photograph four. Nice effect, having a mirror on the wall, huh? Whoa, I had to pinch myself to avoid slipping back.

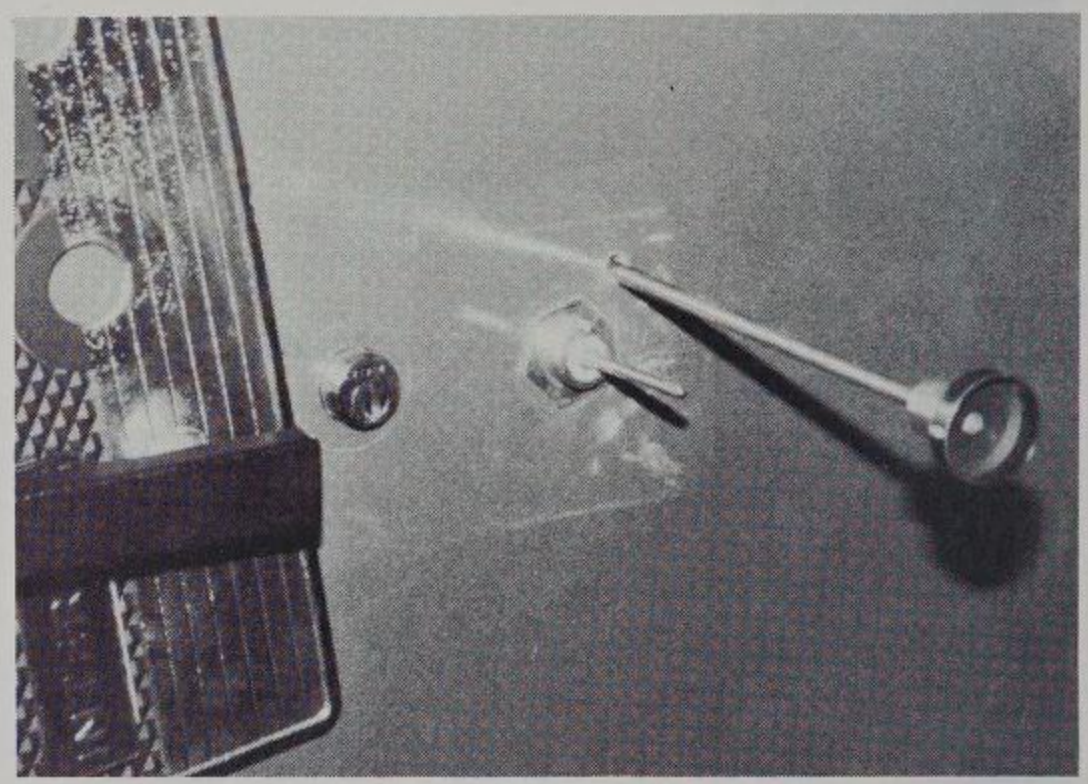


4. Drill partially through the hardplate.

A 5/16 × 6″ Strongarm bit penetrated the surprisingly respectable hardplate (the other Intersec I drilled had none), a borescope was inserted into the lock (*see photograph five*), and voila, the view was beautiful. The wheels were visible, as was the fence.

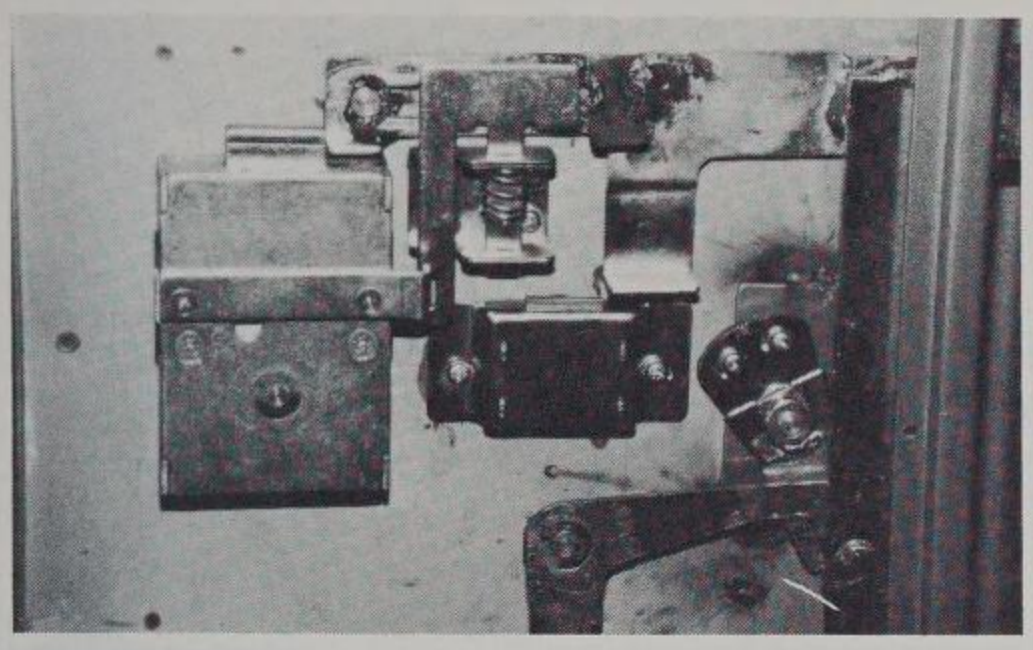
I lined up the wheel gates, removed my scope, retracted the lockbolt, gave the handle a clockwise turn, and the safe was open.

In photograph six, the back panel has been removed, along with the zillion screws that hold it on. There are three rectangular locking bolts on the side; no top or bottom bolts.



5. Borescope inserted in the lock, allowing visibility of the wheels.

6. View of safe with back panel removed.



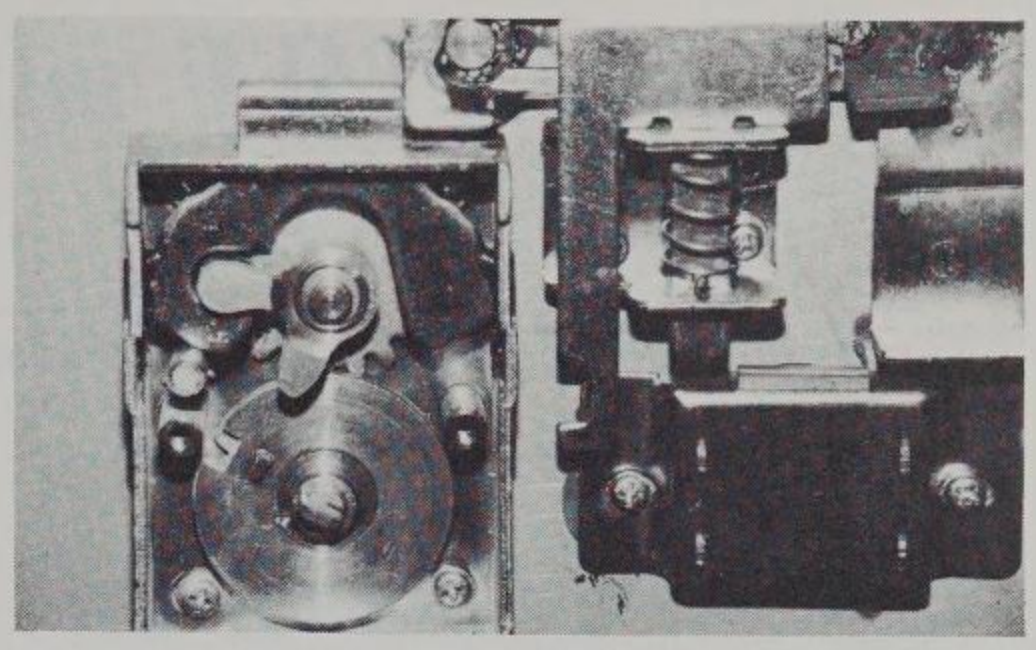
7. The lock and handle mechanism.

Photograph seven is a close-up of the locks and handle mechanism. The keylock is unlocked; the comlock is locked and blocks the bolt bar. Notice the strap on the back of the comlock that holds the external relocking device up.

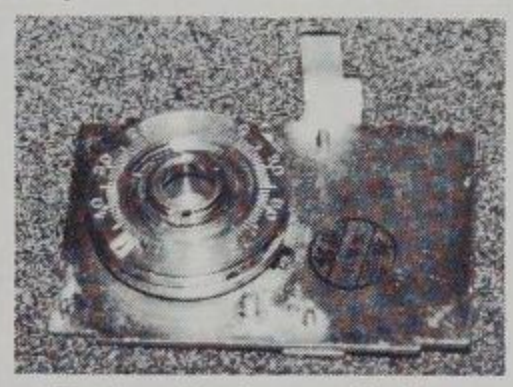
In photograph eight, the back cover has been removed, and we have moved in very close up. The external relocking device has dropped down and is now blocking the boltbar. You can see how much the comlock resembles a Yale OC-5. Pretty impressive.

If you look closely you can see my scope, sticking out of the left side of the lock, just above center. At 10 × 1¼″, you come in just above the back cover screw stud, just below the lockbolt, and just to the side of the fence. Perfection.

Photograph nine is a close-up of the back cover with the wheels attached. There are three 1⅝″ hand change wheels. Like an OC-5, the dialing sequence is R4, L3, R2, L1 to stop, at about 8.



8. Extreme close-up with back cover removed.



9. Back cover with the wheels attached.

Even though I allowed myself, on this occasion, to fall prey to the seductive charm of manipulation, I continue to believe it is more than merely an interesting hobby. Tempered by what Aristotle characterized as "practical wisdom," manipulation can truly be a profit-making skill.

In the case of Intersec, it finally gave in to my more forceful advances, but I still find myself wondering who really had who? ■

What can I say? I'll never forget that interlude with Intersec. Penetration will never be quite the same.

Fighting A Mosler TRTL-30

"There were holes in the lock, in the boltwork, in the right field, in the left field, and more than just a few were completely out of the ballpark!"

by Dave McOmie

Lightning storm shelters. Hurricane tracking charts. Swampland with a long stretch of road called "Alligator Alley" running through it. Signs warning of a "Panther Crossing." Humongous flying insects with divebomber's instincts.

Scenes from Crocodile Dundee III? Nope. Indiana Jones vs. the Creature from the Black Lagoon? Nope. There are real life scenes from my maiden voyage to the great state of Florida, and I lived to tell about it...

As an exhibitor, I attended this year's SERLAC show in Tampa. Well exhibited, well attended (even if not-so-well air conditioned), SERLAC deserves its reputation as one of the top half dozen regional conventions in the county.

Arriving in town my customary day early, I checked into the spectacular Sabal Park Holiday Inn. This place is a real paradise.

I was preparing to visit a local safe company when I bumped into my old buddy, D.W. "Downie" Dowless.

Downie was teaching his 1,074,262nd Advanced Safe Penetration class and invited me to sit in on the afternoon session. He increased the offer to one I couldn't refuse when he casually mentioned that the class was going on a field trip to open a Mosler TRTL-30 dual-bolt lug door.

In that slow, Carolina drawl that has endeared Downie to thousands of us around the country, he very politely asked if I would care to go along. Very politely I responded with the better known version of "does a bear sit in the woods?"

Caravan style, the whole gang of us went out and met the Mosler shown in photograph one. Situated in the back parking lot of an industrial park, we had plenty of room, but were left without electricity. More on that later.

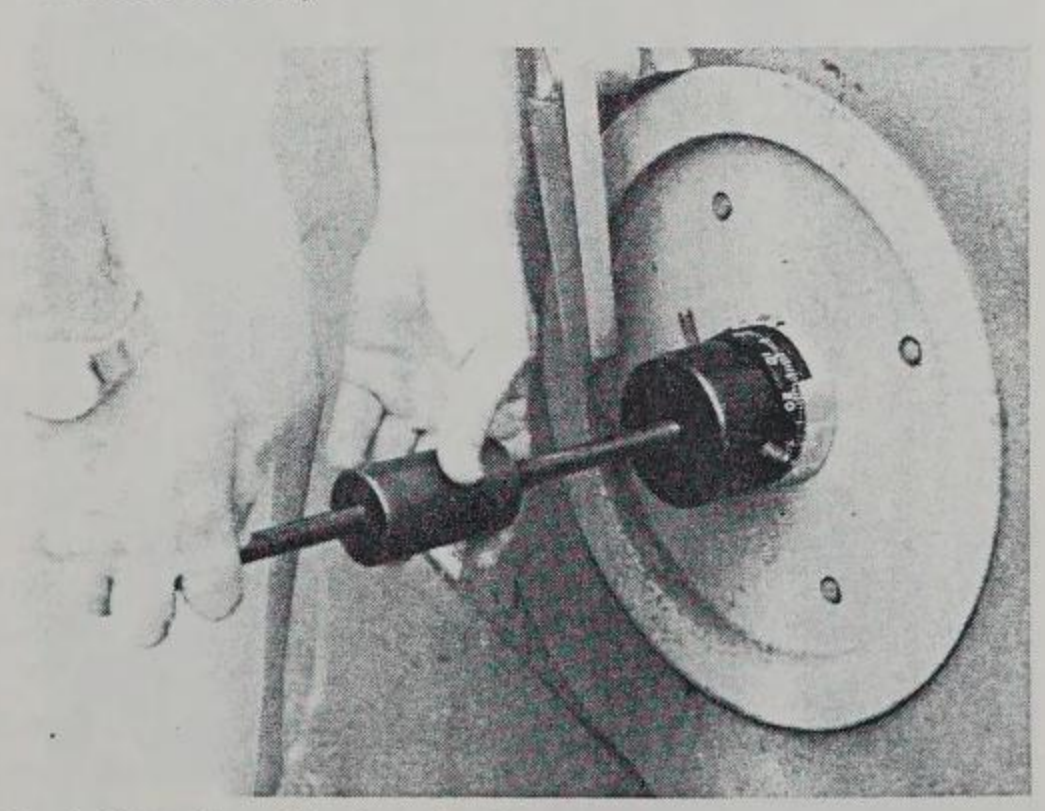
About twenty of us were giving the safe the once-over, when one of the guys noticed a couple of big holes in the back. Gads, someone else had already been here! We shined a light in there, and holy swiss cheese, what a mess. I counted *eighteen* ⅜" and ½" holes going through the backplate. There were holes in the lock, in the boltwork, in right field, in left field, and more than just a few were completely out of the ballpark. I was dumbfounded that anyone would have done, well, such a dumb thing. This was the first indication that Murphy might be paying us a visit.

We took turns fiddling with it for a while, but we were faced with a real lack of tools for attacking the back. And

1. Mosler TRTL-30 dual bolt lug door.

since it was a class, we decided to take the more conventional approach through the door.

In photograph two, Downie has affixed a dial puller to the plastic dial. One gentle whack and the dial was history. (Note: Do *not* slam-hammer the chrome Mosler dials, as you will almost certainly concave the case as the driver is slammed into it.)



2. A dial puller affixed to the dial.

We all analyzed the situation and agreed it would be foolish to drill a borescope hole. The lock had sustained untold damage from the early-bird who had beat us there; we could not rely on everything to work like it's supposed to.

Those words turned out to be true.

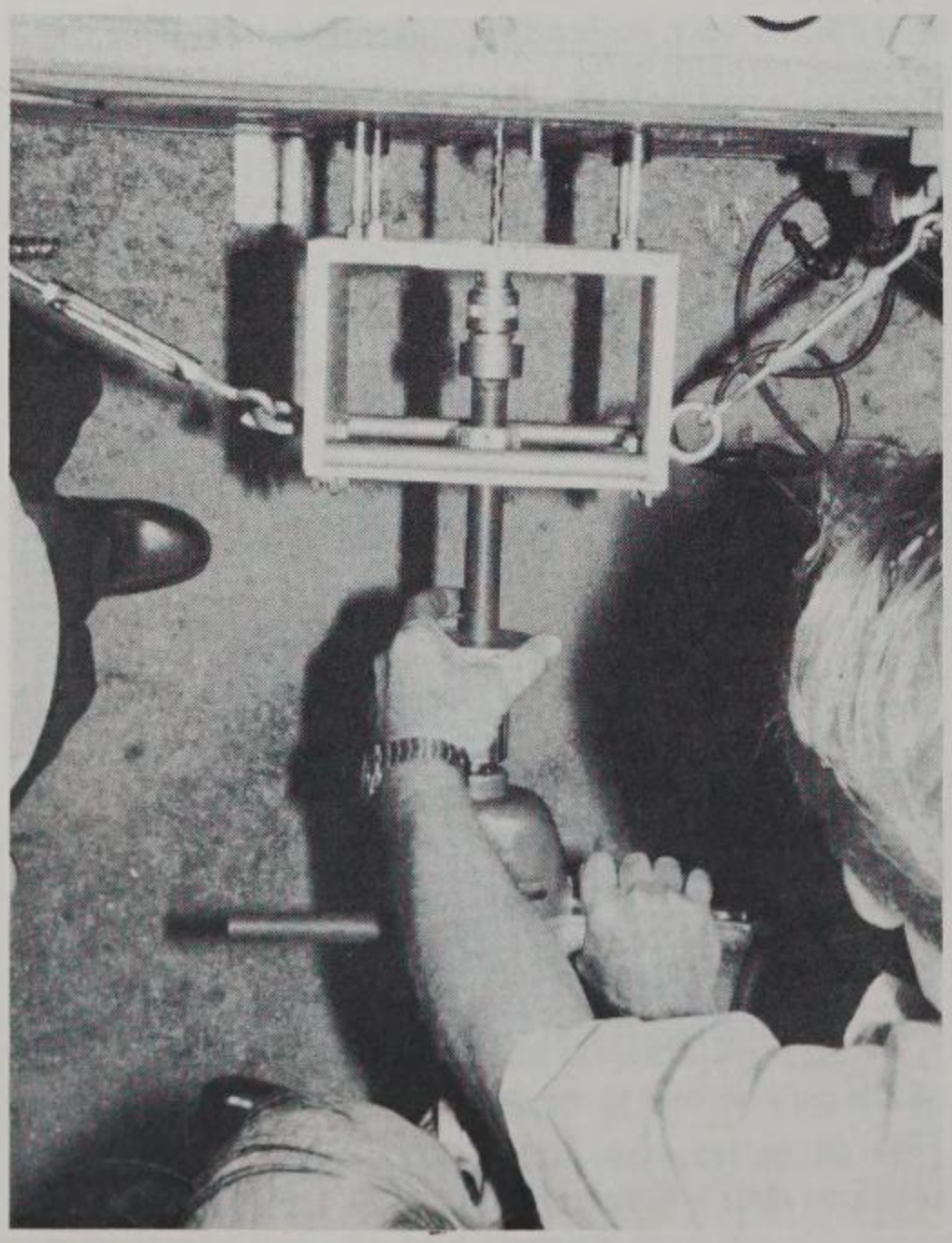
We narrowed it down to two choices: 1) drill the fence off, or 2) drill for the lockbolt and force it up. In true democratic fashion, we elected #1, and in photograph three Downie and the guys are affixing the Penetrator to the safe. With an MR302 template in the VD position, the drill bit was aimed right at the fence (67 × 1⅛″).

We were a football field away from the nearest electrical

3. The Penetrator is connected to the Mosler.

outlet, and didn't have Uncle Fester to plug into, but one of the guys did have a dandy little gas-powered Honda generator.

One good yank on the pull-starter was answered with a VROOOM! We were in business, and in photograph four, Downie is a-goin-for-it. In case it looks confusing, I should point out that this is a top-view photograph, taken by some nut standing on top of the safe, shouting encouragement to

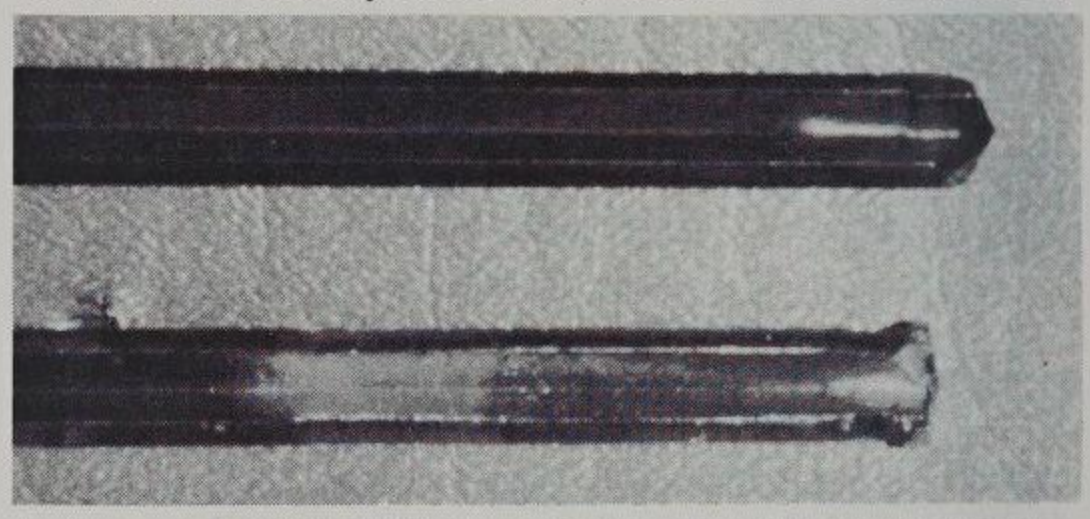


4. Drilling attempt, overhead view.

those brave souls on the front line. (Hey, once in a while it's fun being an armchair quarterback.) Anyway, I would be dragged into the game soon enough.

Penetration started off great. Mild steel for about an inch; copper for half an inch; and then the tough stuff. Everyone peeked in the hole and got a good look at the king of hardplates—Grade 1 Relsom. This is the most talked about and widely feared hardplate of all time, and for good reason. It tears up bit after bit.

We happened to be using B & A carbide tipped bits, which are of very good quality. Photograph five very clearly shows the consequences of climbing into the ring with Mr. Relsom. The bit on top is brand new; the bit on the bottom went one round and was KO'd. Understand however, that the brand does not matter. *Any* carbide bit, whether it be B & A, Z & Y,



5. A normal carbide bit (top) and one used on Relsom (bottom).

or M & M, has the equivalent of a glass jaw against this Tyson-like hardplate.

Once the effect of carbide on Relsom was convincingly demonstrated, Downie went to his van and brought back an example of drill bit technology taken a step further: the diamond-studded hole-saw from Lockmasters, aptly named the "Diamatip."

One-thousand-and-one, one-thousand-and-two, one-thousand-and-three. By my unofficial timer, it took about 40 minutes, give or take a few, to penetrate a solid ½″ of Relsom. Those Diamatip bits sure do work! A word of advice: Don't try to use a Diamatip with a hand held drill or leverage rig. Any side movement at all will take the diamonds right off and ruin an expensive bit. A fixed type pressure rig is mandatory.

Next, the mild steel backing was penetrated, and we were staring through an air-gap at the nice shiny lockcase. The ballgame was nearly over, or so we thought.

The lockcase was penetrated, the fence was drilled off, but the lever simply refused to drop in. We fiddled and fussed and pried and poked, but the little bugger wouldn't budge. This was the second indication that ol' Murph was among us.

Next, we decided to put a hole down at the lockbolt and force it up. By this time it was dark out, and we elected not to mess around with fancy drill bits and drill rigs. It was time for some fireworks. I fired up the burning bar, graciously provided by Lew Noyes, and as fast as you can say, "Take this! Mr. Relsom," the sparkler show was over and we were looking at the lockbolt slide assembly. But it wouldn't even budge.

If I had been the only one trying to force it up, I might have considered the possibility that there was a lack of oomph behind the pry. But it wasn't just me. Let me tell you, Downie's forearms are the size of the average guy's thighs, and when he gets in the act, something is going to give. I think everything that could give, gave, except those darned locking bolts. This was indication number three.

After more than 3,600 one-thousand-and-ones of total frustration with the lockbolt, we opted for what seemed the surefire, absolutely-can't-fail, last resort method for opening a dual-bolt Mosler: going for the bellcranks.

Needless to say, our efforts were of no avail—Murphy had asserted his pressure and unabashedly taken center-stage. Anything, I mean *anything* that could possibly go wrong, did. For a list of what may interest the Guiness people, read on.

Well, to begin with, we ran out of sharp drill bits; but what the heck, dull ones will work if you push hard enough. So push-grunt, push-grunt, and what happens? After serving valiantly for an I'm-too-embarrassed-to-say number of hours, the little Honda coughed, sputtered, and promptly ran out of gas. And with the gas went the drill and the lights. The darkness was easily solved with a pair of halogen headlights, and I didn't skip a beat in dropping the drill motor and picking up the burning bar. Boy, I thought I was so clever.

Downie, who has the world's greatest sense of humor, and an equanimity second only to that of Job, grinned at me and chuckled. I think he knew what was coming. One minute I was blazing away at nearly 10,000° Fahrenheit, the next minute I was holding a lifeless, cold rod. We had run out of oxygen.

In retrospect, it was probably a blessing in disguise. It gave us the perfect excuse to do what no self-respecting safeman will ever do, and that is to walk away with the safe still locked. Aargh! It pained me then and it pains me now as I write these words, but as exhausted as we all were, it was the only sensible thing to do. So we left Murphy and Mosler alone; they deserved each other.

Back at the hotel, I stumbled into my room and collapsed onto the bed. Fully clothed, with dirt from nose to Nike, I was out before my head hit the pillow.

I swear, it was only five minutes later when that fire-alarm of a wake-up call pierced my consciousness. Nike answered it.

I mention breakfast only to relate a comment that came from the table behind me. Little did I know that it was already big news that Downie and I had fallen on our collective gluteus maximus. I was slugging down a glass of what brown cows make, when one of the locksmiths made a remark that almost made chocolate milk come out my nose. In a quite matter-of-fact tone of voice, he said, "Yeah, I guess the old pro and the boy wonder got stumped yesterday."

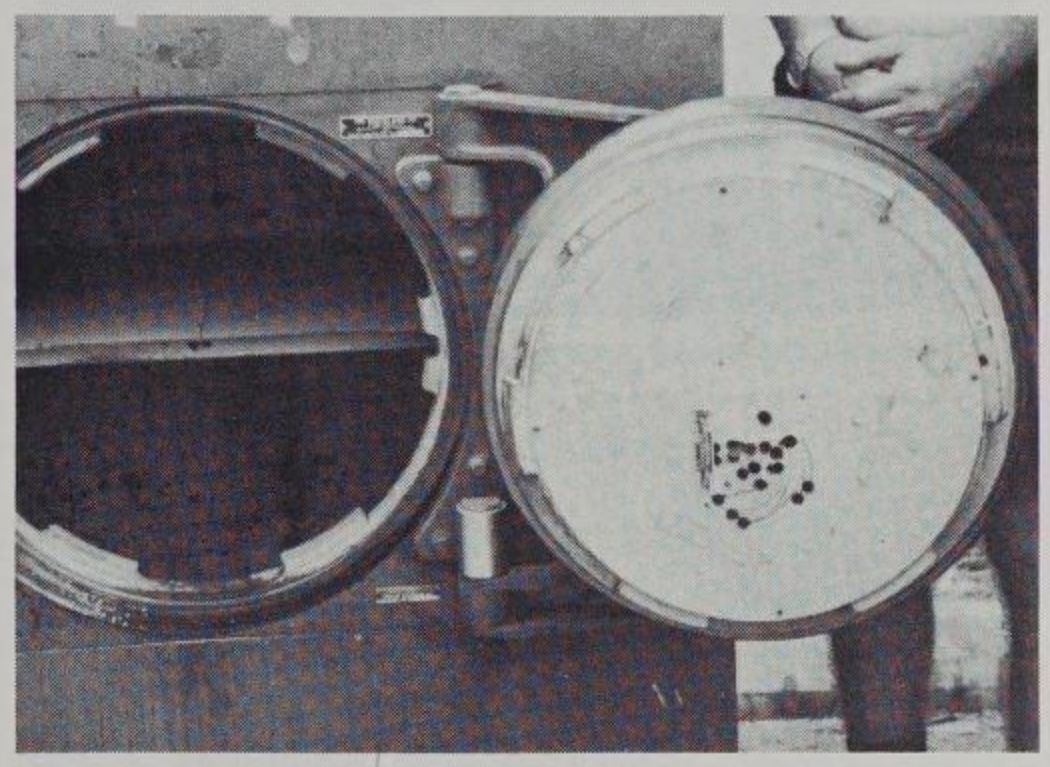
After two or three seconds of intense concentration I was able to re-route my Nestle's Quik back in the right direction. I was dizzy with hysteria. Never in my wildest dreams did I ever expect to hear someone describe D.W. Dowless as a "boy wonder." It still cracks me up! Oh well, take heart D.W., someday you'll come of age.

I heard about our so-called "defeat" all day in my exhibitor's booth. But I was in good spirits following that remarkable breakfast and laughed right along with everyone else. Silently though, I made a pact with myself for redemption on the morrow.

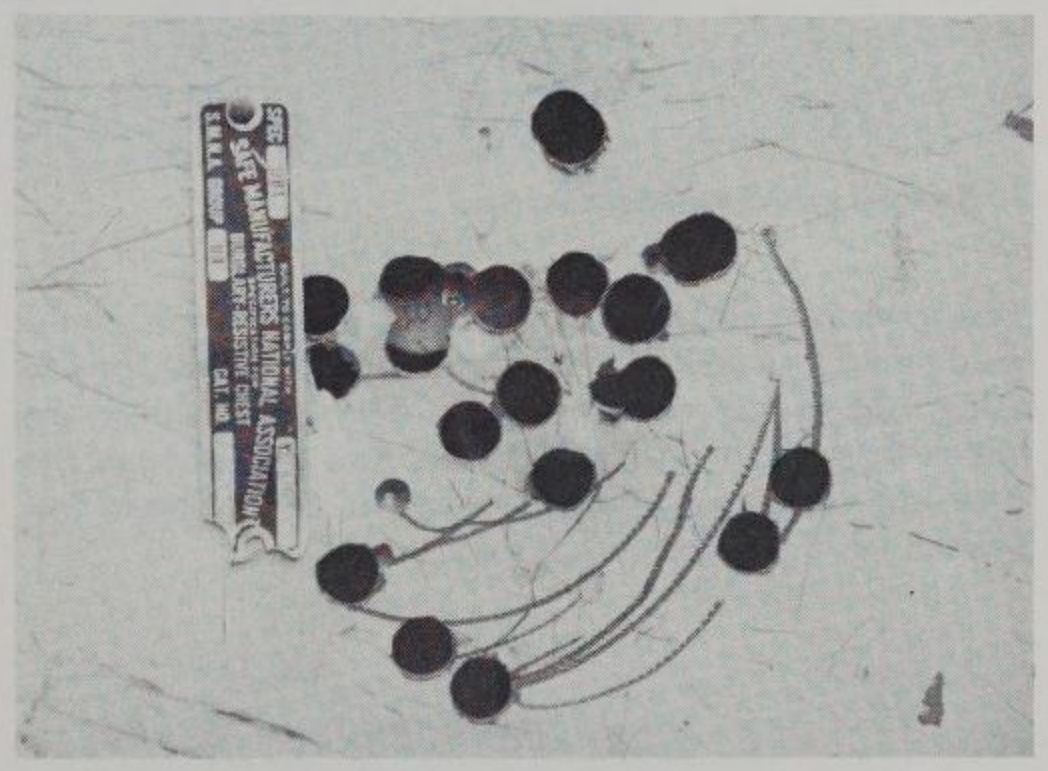
Downie must have made a similar deal with himself, because he rang my room the following morning a full hour before my scheduled wake-up call. The "Diehards" met at the crack of dawn, coffee in hand and wounded pride in tow, to have their rematch.

This time Murphy wasn't around, and it wasn't much of a match. I brought my demonstrator set of long drill bits, and we put them right to work. Through the foot thick cladding, we went, to side punch the locking bolts. Once again we bumped into Mr. Relsom, and no time was wasted on formal niceties—I went straight for the burning bar. I'll admit to deriving almost sadistic pleasure this time around from poking Mr. Relsom with the hot rod. It was great. (The 98 lb. weakling turned He-man, who gains his revenge by mashing the beach bully in the nose, knows the feeling well.)

Wham! Wham! said the hammer, and the stubborn,



6. Photo shot immediately after safe was opened.



7. Close-up of holes put in safe by another party.

quarter-century old lug door finally swung open. The Diehards had triumphed. Photograph six was taken immediately following the victory celebration which consisted of mutal hand-shakes, back-slaps and imaginary douses of champagne.

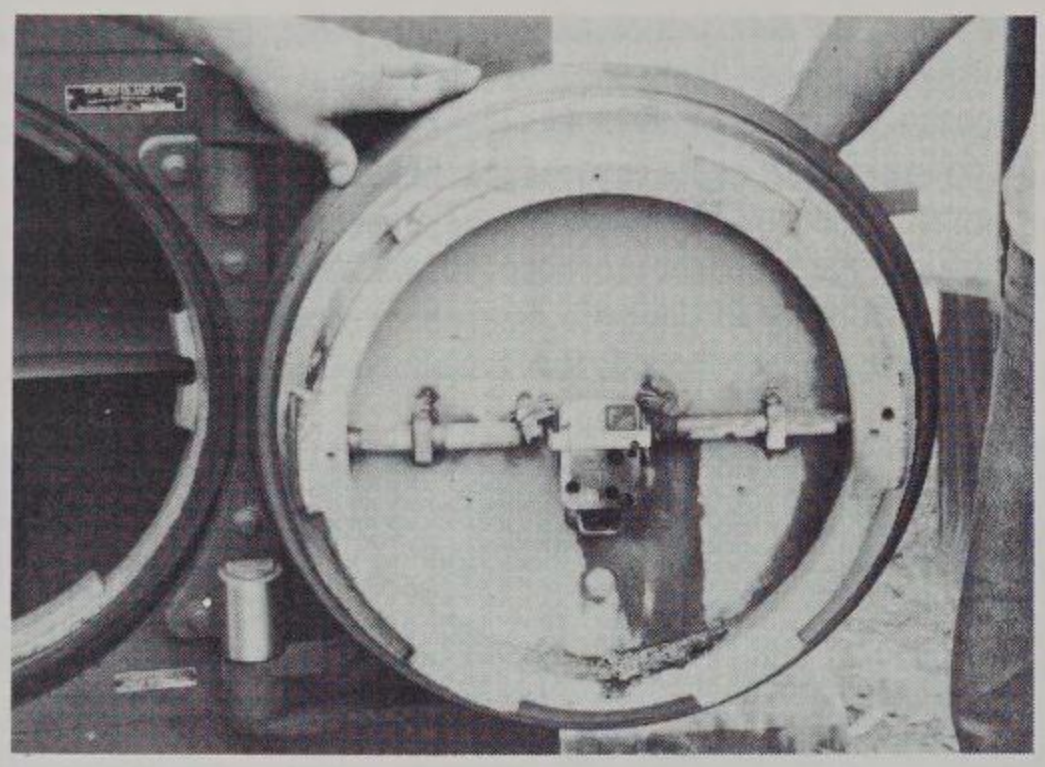
In photograph seven, you can see the holes close-up. Count em! What this guy was thinking (answer: he wasn't) I'll never know, but I do know he complicated our job a hundred-fold.

Photograph eight, with the back plate removed, is a little ugly. The only good thing about this photograph is that the locking bolts are retracted!

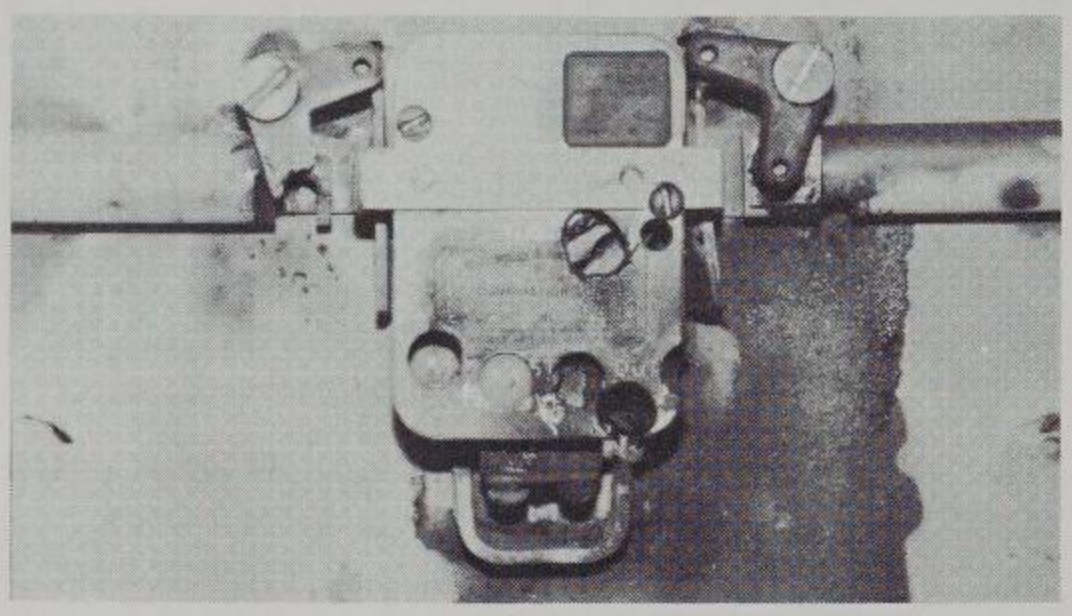
Photograph nine is even uglier. Notice the big hole in the lower left-hand corner of the lockcase. This was an especially damaging hole, as we will soon see.

In photograph 10, the back cover has been removed. Notice all the detritus laying in the lockcase. Triple that amount fell out when I removed the back cover. Know what that stuff is? That 'stuff' is what's left of the wheels!

Photograph 11 is an unbelievable photograph of the back cover. The outer portion of the wheels is completely gone!

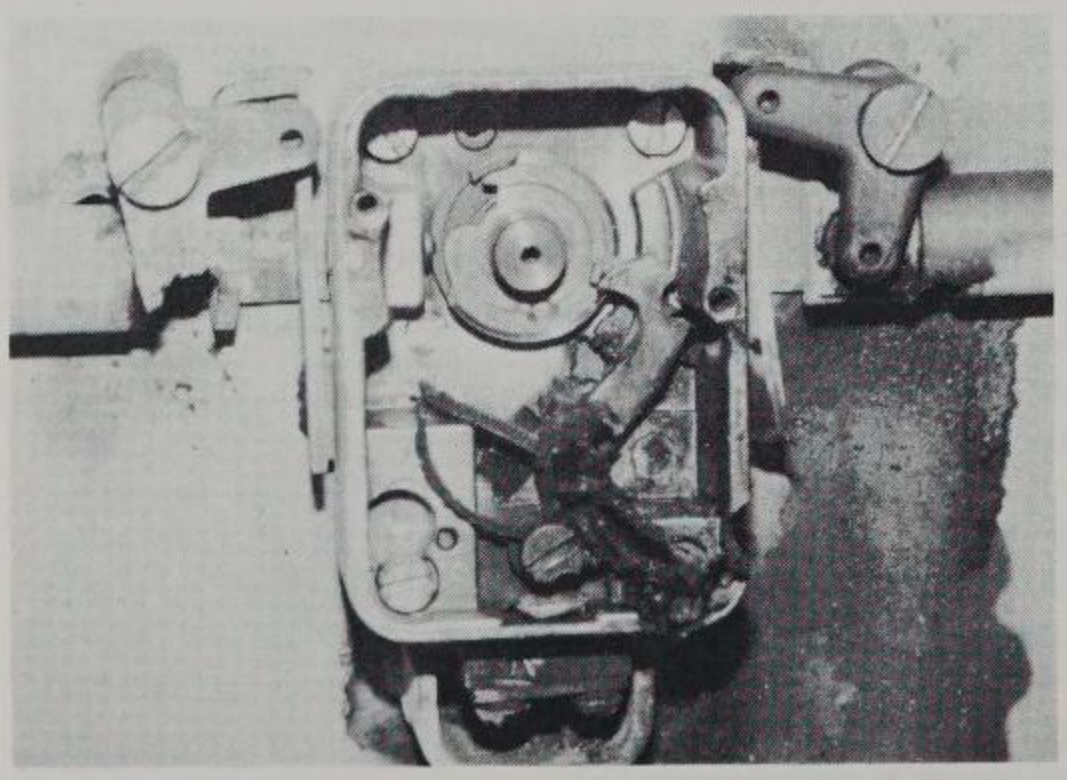


8. Door with backplate removed.



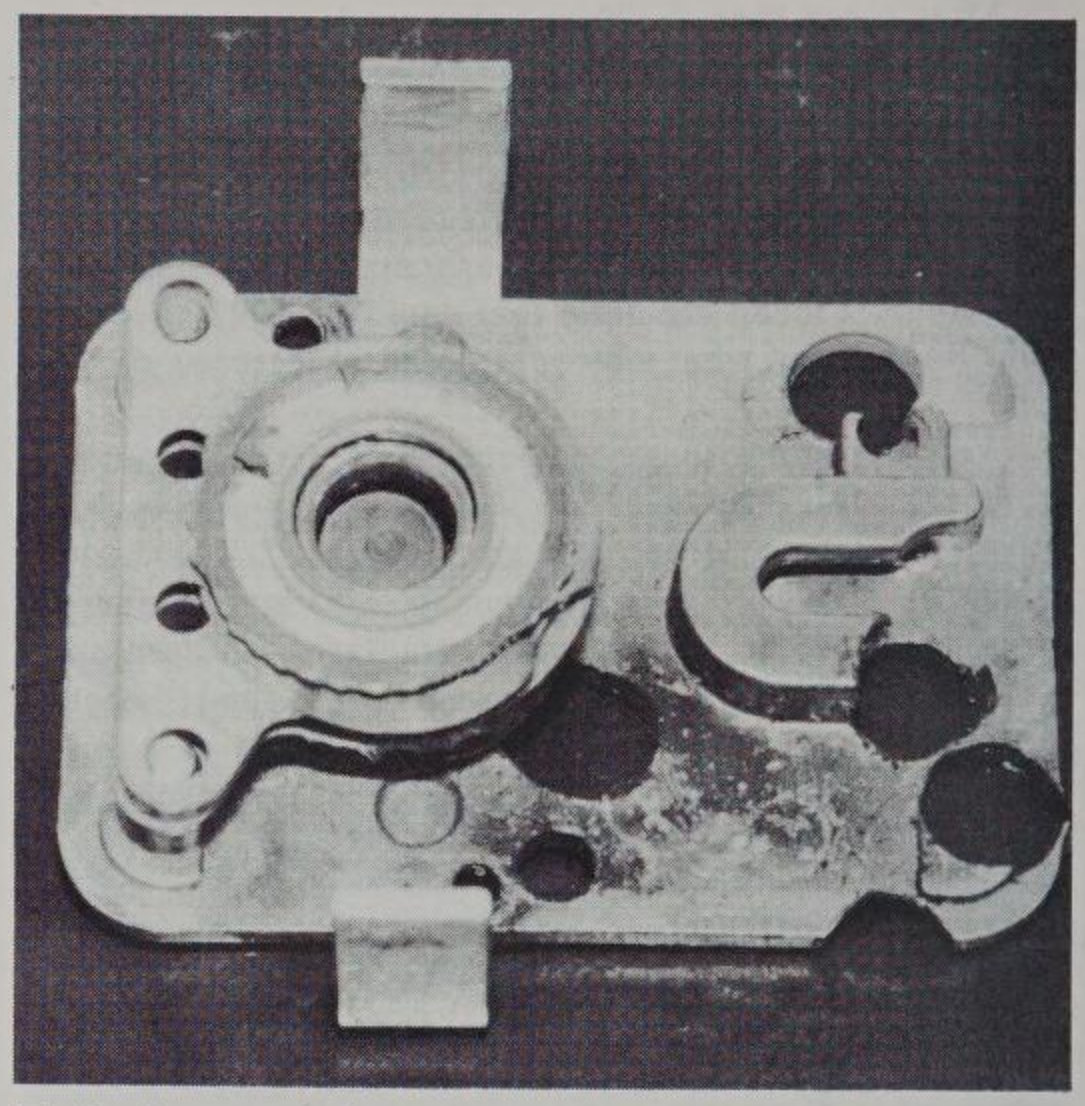
9. Damaging holes in the lockcase.

This was accomplished through the hole discussed in photograph nine, and could have opened the safe except for one thing: one of the other seventeen holes had removed the relock trigger detent, which means that even though the back cover was on tight, the relock in the lockcase was preventing the lockbolt from retracting.



10. Backcover removed exposing detritus.

The absence of the plastic feet on the relock strap which keeps the external relocking devices in check, I can't explain for sure. They may have been melted off by the burning bar, or who knows, maybe they weren't there when we started. (This actually happened to Downie once.) I don't know, and frankly my dear, I don't give a damn.

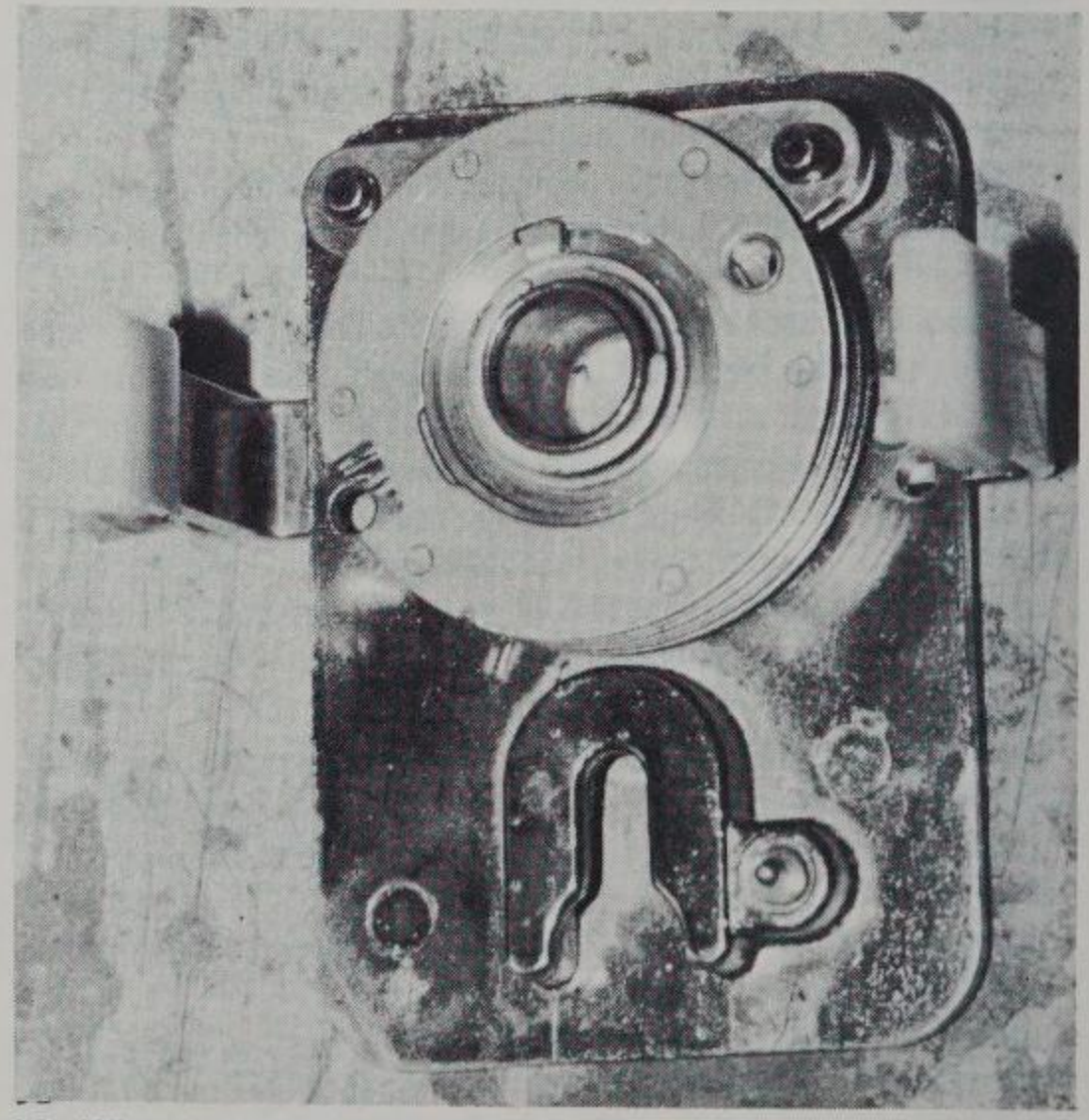


11. Backcover missing outer portion of the wheels.

I have included photograph 12 to show a 'normal' back cover that still has its wheels and relock detent intact.

Photograph 13 is a mug shot of "The Diehards" minus Downie, who ran off to become a CML before the green light in my camera went on.

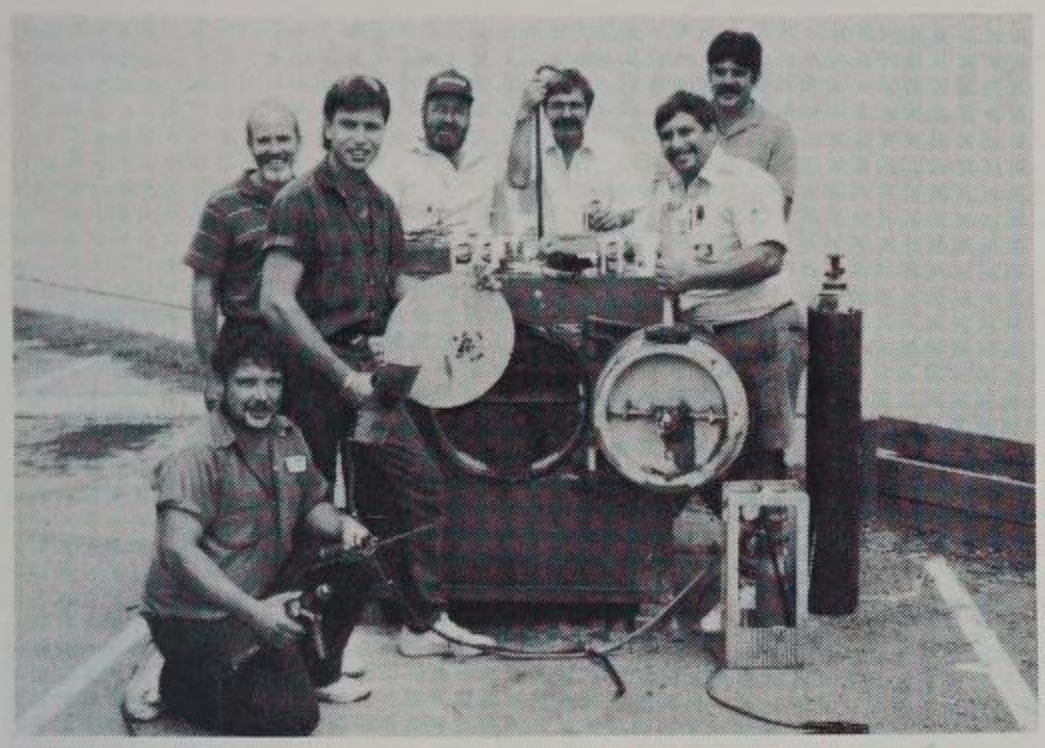
The mental magnificence, physical fortitude, and diehard



12. What "normal" backcover should look like.

determination displayed by these guys through the whole ordeal requires me to bestow upon each an honorary purple heart. What a team!

Catching up with Downie at the hotel, we sat down for a late breakfast. He was already chuckling about the whole thing, but I had yet to see the humor. As we ate and talked, I was struck by his near-absolute unflappability. Nothing



13. "The Diehard" safe opening team.

seems to rattle him. Just one more reason why Downie is one of the most sought after instructors in the country.

And having been side by side with him in the trenches, I must say that if I ever have to traverse Alligator Alley on foot with Murphy in hot pursuit, D.W. Dowless, the "boy wonder," will be my first choice for a running mate. ■

Mosler's dual-bolt lug doors are difficult enough, without the aggravation of dealing with someone else's swiss cheese.

Solutions To Safe Problems

"Equipped with my new laptop computer, I can now write almost anywhere. This has allowed me to catch up on some of the safe questions that I have received."

by Dave McOmie

Dave Mcomie frequently receives Safe questions from our readers. Often, these are included as part of Shop Talk. *This month, however, Dave answers several questions in depth, in article format.*

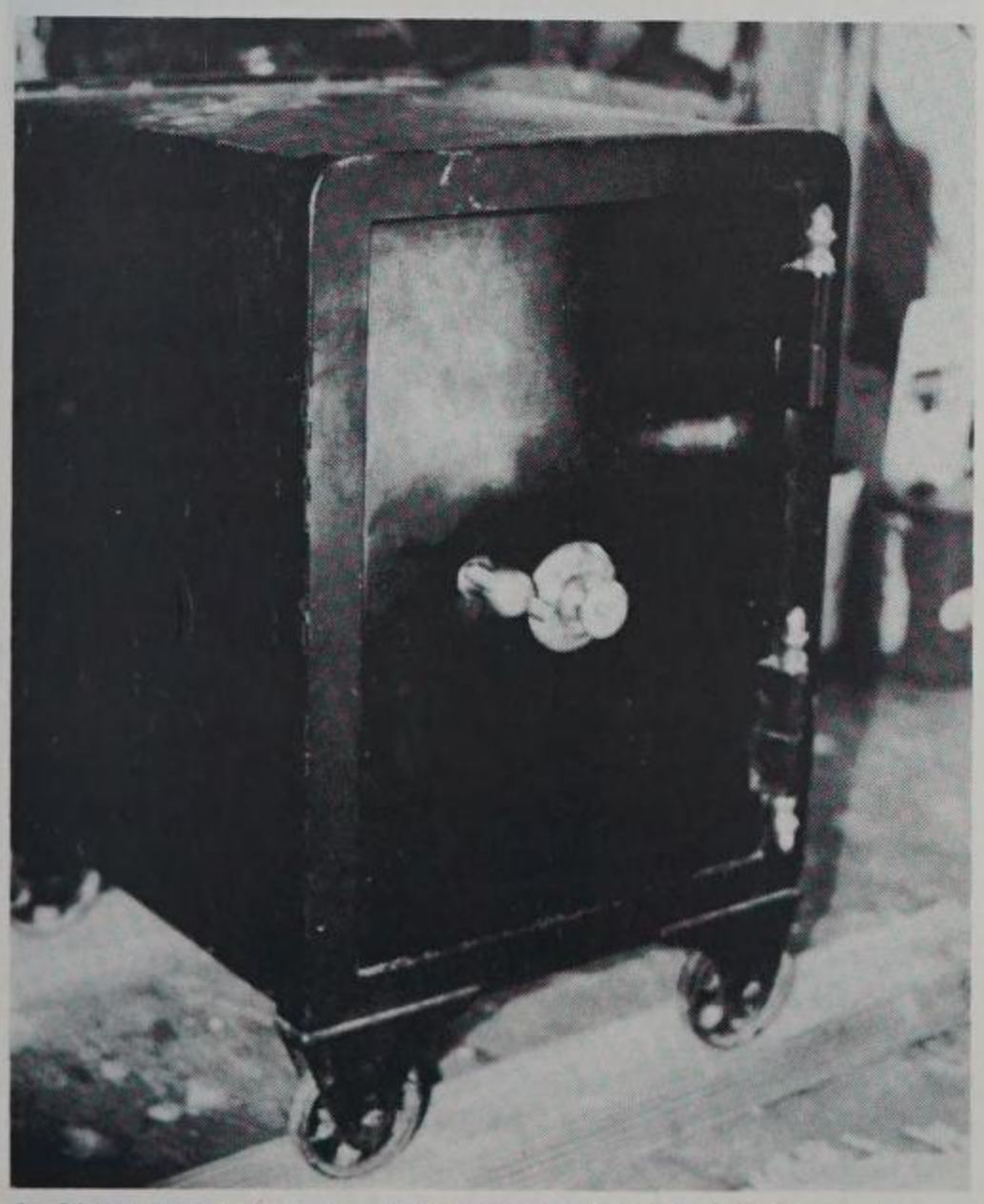
I was very excited when I was able to open the safe shown in photographs one and two on my first attempt at manipulation.

Could you tell me anything abou the age of this safe? It looked like it had not been opened for a number of years. This is a Meilink Special Lock, serial number C-63659.

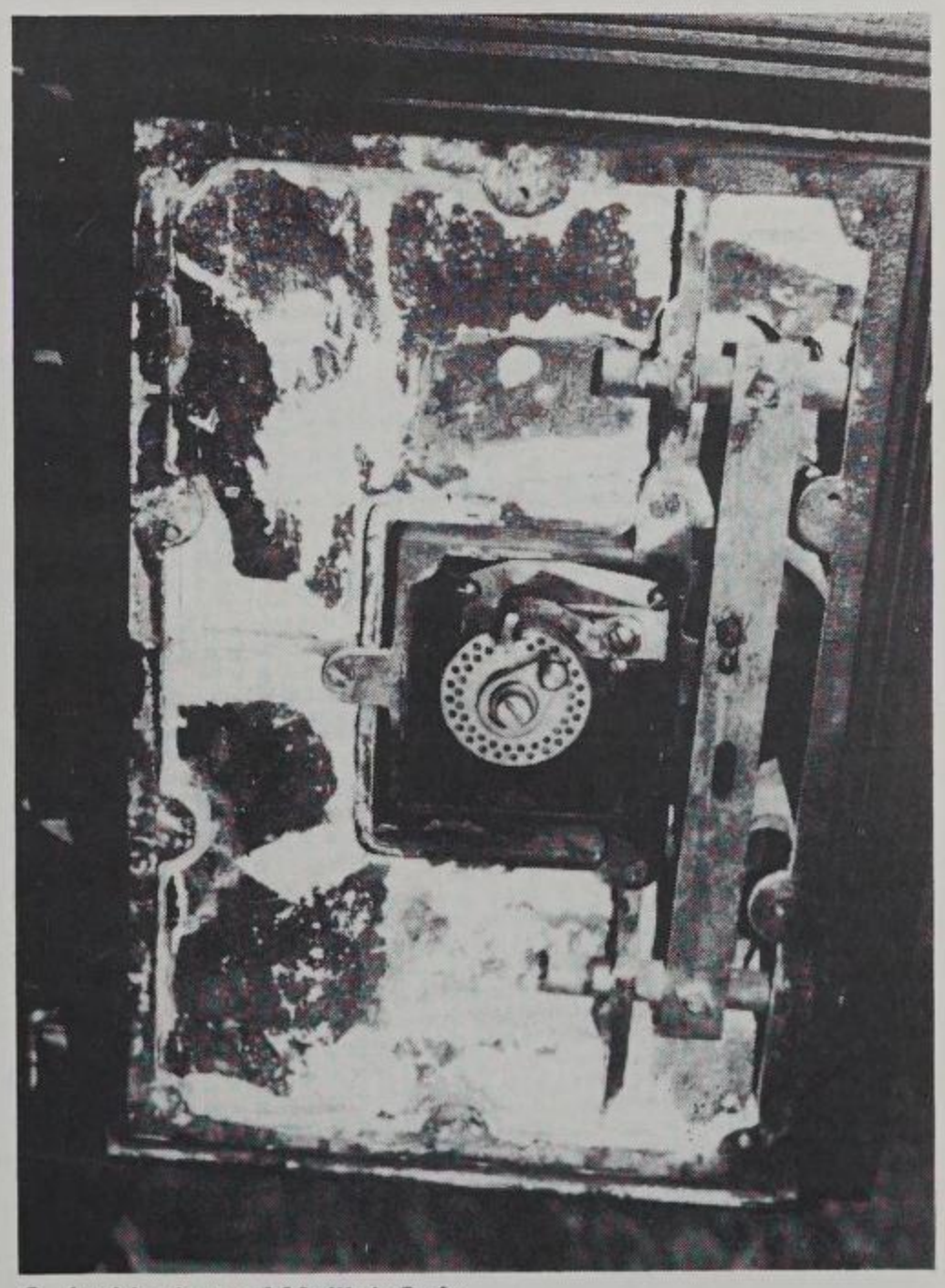
Also, I got it open by dialing left 37 —4 times, right 18— 3 times, left 21— 2 times then right to open. But when I was reading the wheels from the back after it was open, I could have opened it by dialing, left 15— 3 times, right 22— 2 times, left 42- 1 time and right to open. Then when I fiddled around with it, I found it would also open on right 18- 3 times, left 22- 2 times and right to open on 42. Is this unusual?

Eugene Gentry
Arizona

Congratulations Gene, on your first successful manipulation. That first conquest provides a thrill almost unmatched in the human experience.



1. Meilink Home Deposit Vault with Meilink Special Lock.



2. Inside door of Meilink Safe.

I have a catalog page that shows seven different models of the Meilink Home Deposit Vault (guaranteed fire and waterproof). Some have dummy handles and others have active handles. Some have boltwork, a single bolt, and some have a crescent-shaped bolt.

Two different locks were used in these safes; both manufactured by Eagle. One is a small combination-operated cabinet lock. The other, which was made exclusively for Meilink, was the aptly named "Meilink Special Lock." With two wheels and a rear mounted driver, manipulation is the way to go.

I'm sorry I can't date it precisely for you, as my catalog is undated, but I would guess these were manufactued around the turn of the century.

As for the various combinations that will open the lock, I would simply point out that *any* safelock can be opened by starting in either direction. In most cases, however—yours is no exception—an extra turn of the dial is required.

Your first example contains unneccessary dial rotation. Left four times to 37 is accomplishing nothing because this is a two-wheel lock. Your second example shows how starting in the wrong direction can still open the lock. Notice the extra turn required to retract the lockbolt. Your third example is the proper and simplest way to open the lock with a minimum amount of dialing.

****

Recently I acquired a small safe (a Wards Home Deposit Vault) with no combination. I would like to open it with as little damage as possible as I want to sell it to pay for training courses so I can learn more about locksmithing. Illustration three is a drawing of the safe.

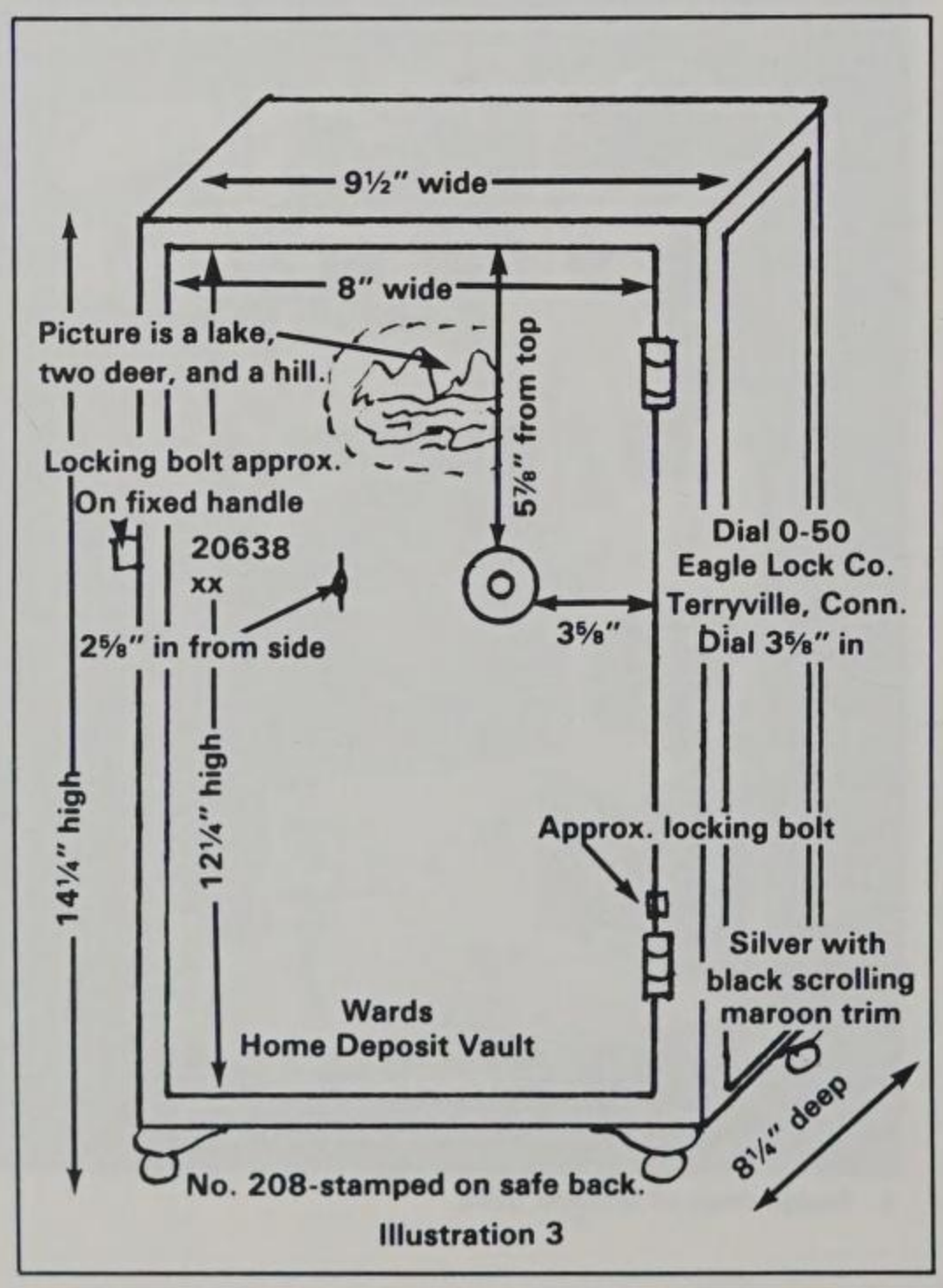


Illustration 3

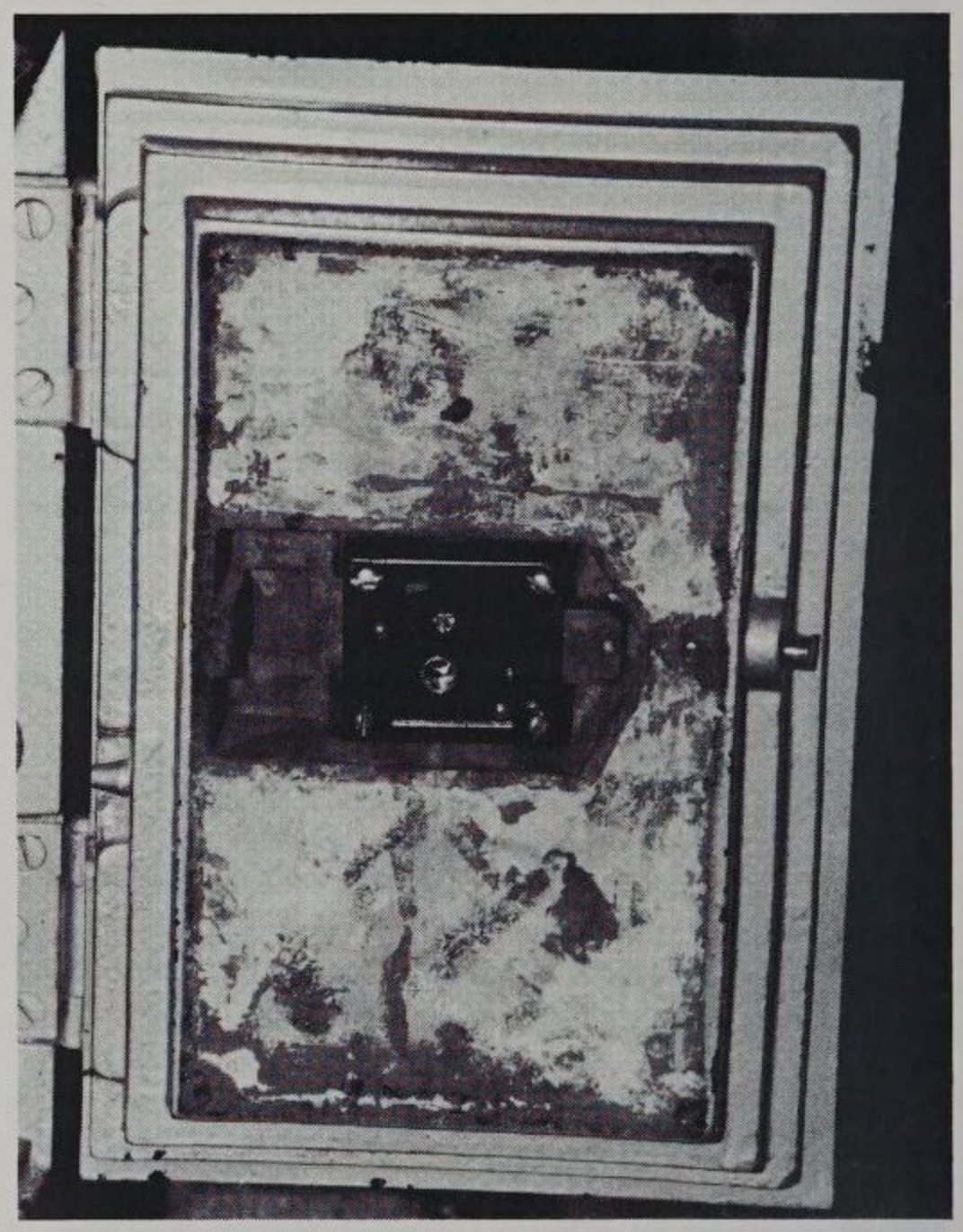
I have taken the Foley Belsaw course, but I feel I need additional training.

Jerry Amundson
Iowa

Jerry, you have acquired a genuine classic. If you really do want to sell it, I would like to have first shot, and I'll buy it locked up to boot!

If you want to open it I would strongly recommend manipulation; it would be a shame to have to put a hole in such a bona-fide antique.

This safe was manufactured by Meilink, and is in the same family as Gene's safe in the preceding question. I'm not sure which of the two locks yours has, so if you need a drill point I will give you both. The drill point for the lock in Gene's safe is 5×2″. With a borescope, look down and watch the gates line up under the fence. In the event yours has the cabinet lock, I have included an inside view (*see photograph 4*).


4. Inside wards home deposit vault door.

There are 3 choices: 1) Drill at an angle into the lock through the dial ring at 15; transfer to drop-in at 0. This is tricky, as the door is only ⅜″ thick to the lock, and the two wheels are only 1⅛″ diameter. 2) Drill for the pin on the lockbolt that connects to the locking bolt at 1¾″ LC, 5/16″ up. This makes repair rather difficult. 3) Side punch the locking bolt, which is 5/16″ up from door center, ⅞″ deep. This also make for a tedious repair.

The truth is, I would rather open almost anything else, because of the problem of damaging and having to repair an obsolete lock. Good luck, I hope you can manipulate it, and let me know where to mail the check!

****

I need opening information for a Clover & Flowers Safe. It is locked and I am unable to feel contact or hear a fence.

*I have enclosed a drawing (*see illustration 5,*) showing the safe and listing measurements and all I know about this safe. I know the dial is an S & G 1-50.*

I would like to know the manufacturer, and drilling information for this safe.

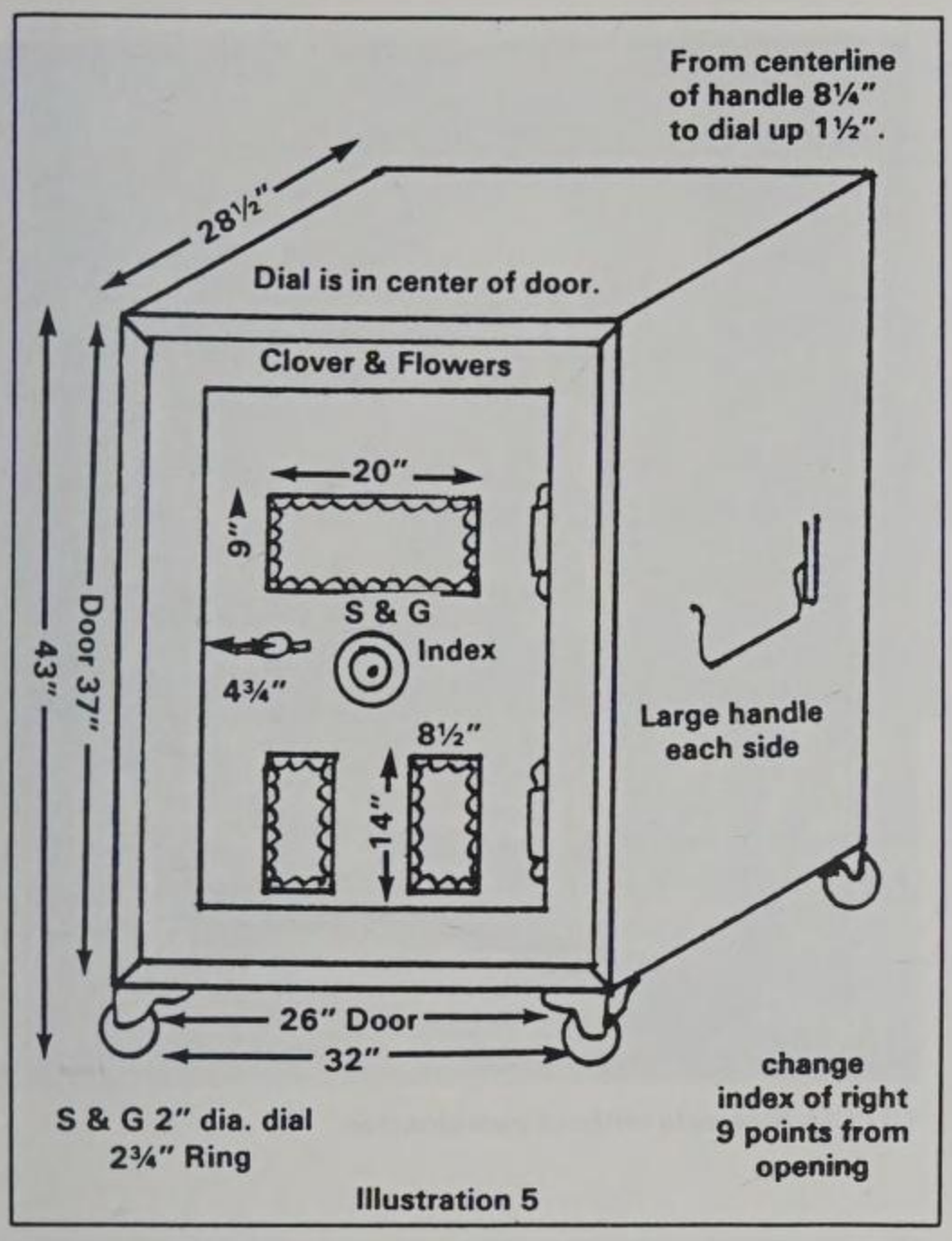
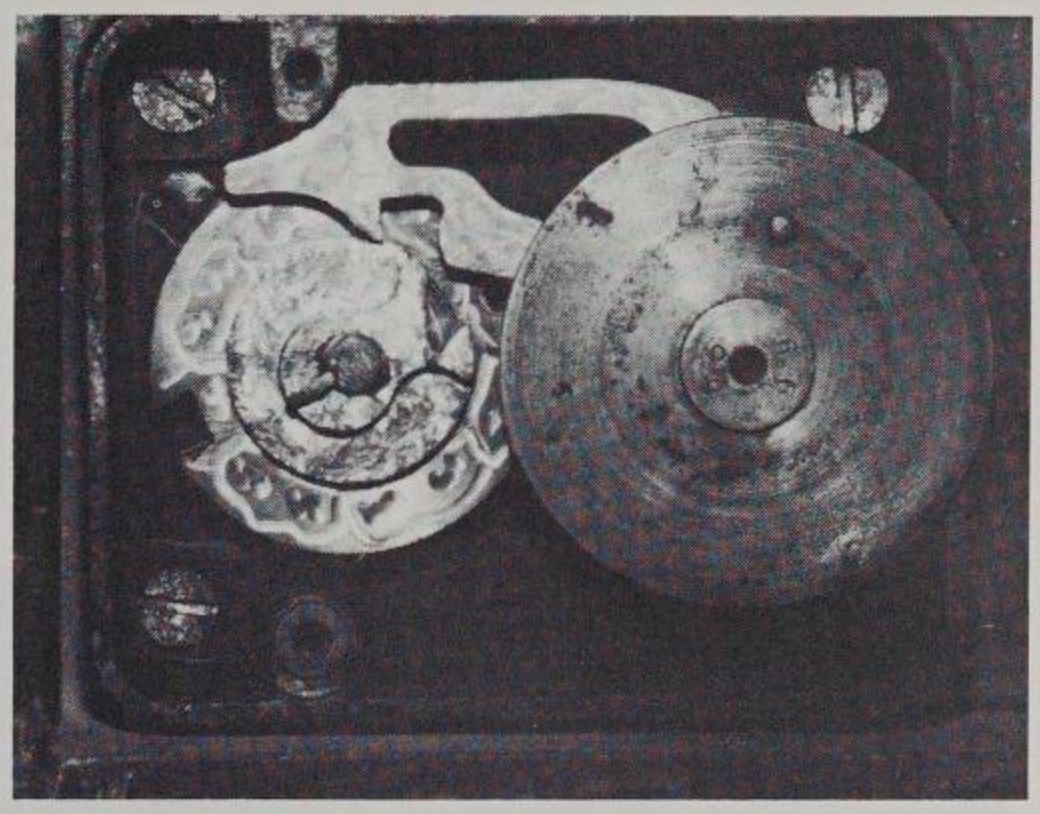


Illustration 5

Roy Watters
Pennsylvania



7. The S & G C96 lock.

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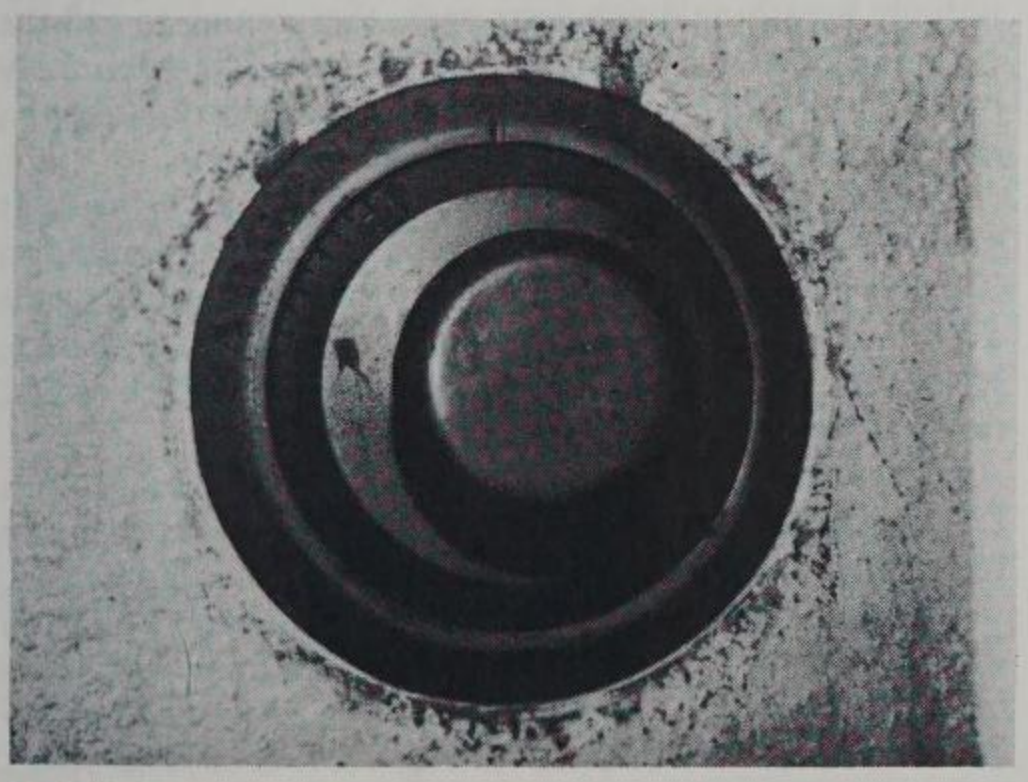
*I have a safe that a customer brought into my shop (*see photograph 8*) which the maintenance man had closed and locked the door to weld the hinges. The only problem is that there is no combination.*

I drilled it, lined up the gates and walked the dial around until the lock unlocked.

However, the safe still won't open. The handle turns about 340° and on an extreme right turn, the top of the door draws in as though bolts are locking.

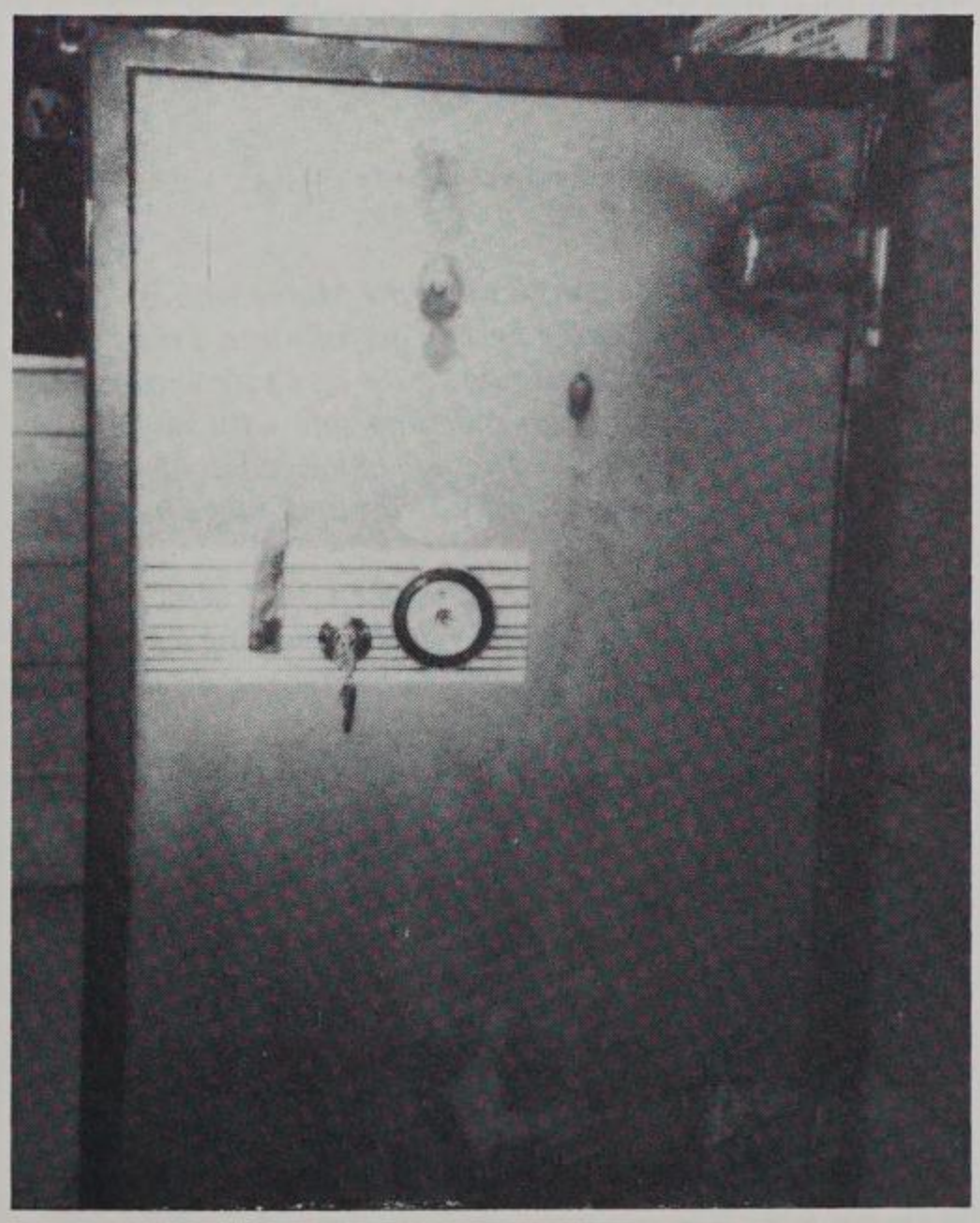
Roy, every safe, regardless of manufacturer that I have seen with the dial you describe (*See photograph 6*), has been



6. S & G 1-50 dial.

equipped with one of the old S & G roller bolt locks. Most commonly used with the S & G 50# dial was the # 3 (later named the C96) as shown in photograph seven.

I would drill in at an angle from outside the dial ring at 97-98. You can't miss; the lock case is quite large. I doubt you will encounter any hardplate. An alternative is to go for the bar that enters the lockcase, but this can lead to unnecessary repairs. Go for the lock, take your time, and it is a sure bet that you will be successful.

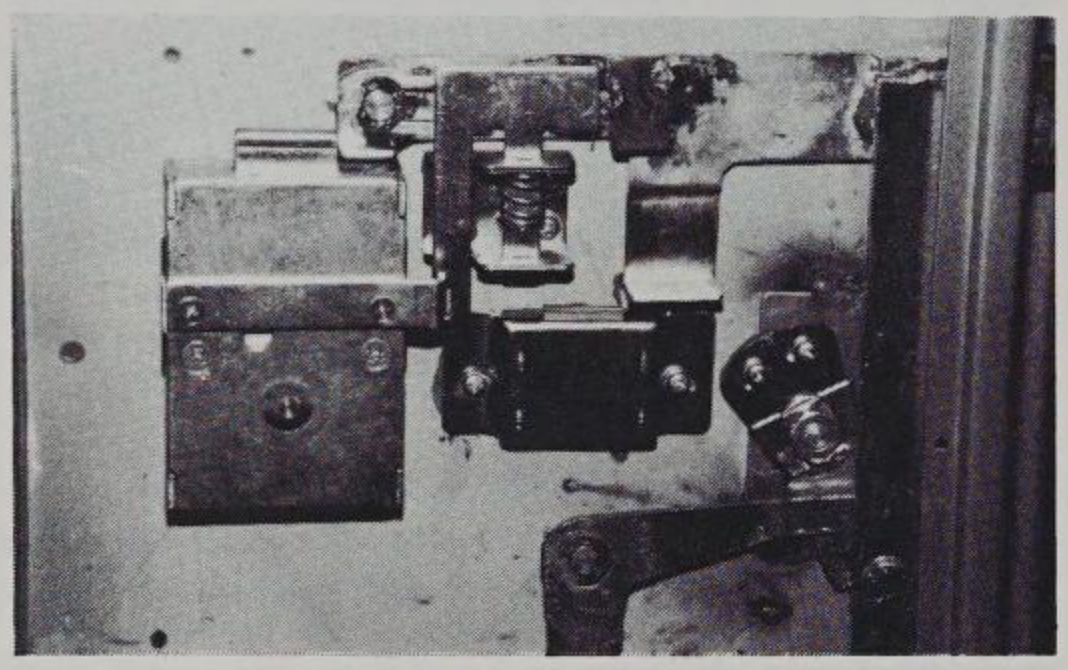


8. Safe brought in for opening.
It is a fire safe with no markings or name.

What do you suggest?

Bud Gurley
New Mexico

Bud, I think your safe is one of the Japanese or Korean imports. My guess is that the lock is an imitation OC-5 mounted VU—similar to Intersec's endowents as were displayed in the November issue. (*See photograph 9.*) However, the dial ring on your safe looks very much like a La Gard, so I can't be sure. Did the lock open to the right or to the left?



9. Intersec lock and handle mechanism.

Since you have the lock unlocked, it doesn't really matter. The next step is to retract the bolts. I would side-drill for the center side bolt. Pushing in on the bolt will simultaneously retract the rest of the bolts. I believe you will find a bolt at 3″ up from dial center, at a depth of 2½″ to 3″. When side-drilling, pay careful attention that you don't wander off at an angle. An alternative is to drill through the door, going for the boltbar that slides by above the lockbolt. You should find this about 3″ up, and several inches LC. Take your pick and good luck.

****

I am a part-time locksmith up in the Maine woods. There is not enough locksmithing here to go full-time. I read your column every month. I have not done any safe work at all and a guy has given me an old time safe with no known combination's or numbers. The safe belonged to his father. He said that if I could get it open without damage he would buy it back.

I do like a challange now and then so I sent for the "Manipulation" manual by Robert Sieveking. I would appreciate all the help that you could give me on this box such as age and possible value.

The dial reads from 20-100 with single graduations and it is a Sargent & Greenleaf dial. It has a star at top center of the ring and an index mark to the right of the star about nine graduations apart. Could you also tell me if it is a spring-loaded fence, friction fence, gravity fence or direct entry.

I know that I am asking a lot but I am just a beginner and also hard of hearing. I have been thinking of a hearing amplifier but can't find out how much they cost or if I can afford one. I have taken a few pictures of the safe to send to you so you could see it better.(See photograph 10.*)*

Would this be a three wheel or four wheel pack? Do I go right or left first? What about this space between 100 and 20 as it is about 1½″ and is blank. Would this safe also be an antique? The center of dial knob has stamped on it Sargent & Greenleaf. Pat'd., Sep-18-1860, Jan-9-1866, Aug-28-1866, July-14-1857, ex. 7 years, July-14-1871.

10. Old-time safe without combination.

I am hoping that you can help this old timer out because I sure do need it.

Robert White
Maine

Bob, enjoy the luxury of having a safe to open with nobody breathing down your neck, threatening to call the state pen for a "real" safecracker. Manipulation is definitely in order here, where the usual time constraints don't apply, and you can manipulate to your heart's content.

Sieveking's book is an excellent manual to have. Without question it is the most thorough treatment of manipulation I've seen in print. The fact that it is so thorough also makes it a bit of a long read, so be sure and take it in bite size chunks. It, like any other good investment, will pay for itself many, many times over.

I would also recommend taking a class on the subject. Lockmasters, Security Education, ALOA and many regional conventions all offer fine classes on manipulation.

Okay, off the soapbox. Let's look at your safe. You have what appears to be an old Barnes cast iron fire safe; probably manufactured in the 1870's. Most of these, including the two I have drilled, were equipped with an S & G 6800 series roller bolt lock, as shown in photograph 11. If you have to drill, go in at an angle just outside the ring at 97-98. There is no hardplate.

As for estimating the value, I can only suggest you walk into the safe company nearest you that handles used equipment, and see what kind of price tag they have on cast iron safes in comparable size and shape. This varies greatly from region to region. In some areas safe dealers can't seem to give away cast iron; in other areas they sell well, and occasionally an antique in fine condition can bring high dollars. Check it out.

11. S & G 6800 roller bolt lock.

Having read many of your articles on opening safes, I figured you may be able to help me locate a change key for a Yale #2421 Y combination lock used on York safes. I tried to manipulate this one, but ended up drilling. It hadn't been open for about 20 years or more. The first quarter inch was tough, but after that I had no problem.

It's a beautiful lock, and works well, but I sure would like to be able to change the combination and I don't want to use a key which is not the right one and ruin the wheels.

I have checked with Lockmasters, HPC, and H. Hoffman Co. but no one has a key.

I was hoping with your connections, you would know of somewhere that I could obtain a key.

John Wood
Michigan

John, first of all, thanks for putting up with my long-windedness and reading the articles. It's always good to hear from someone who can make it all the way through!

Secondly, I agree, the 2421Y is indeed a beautiful lock. I have a perfect specimen in my collection, and I wouldn't part with it for anything, save a date with Jane Seymour.

Thirdly, the change key. Go to your local supplier and ask for an HPC #SLC-20 or an SLC #27. With any luck they will still have one in stock. ■

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Denver Safe Opening Blizzard

"Last December 50 of us spent a weekend drilling our brains out at Pike Safe's warehouse in Denver. It was a safecracker's paradise."

by Dave McOmie

What is the definition of safecracker's paradise? How about a warehouse full of locked safes, a good drill motor and a box of carbide. Hot doggie, that's it!

Last December about 50 of us spent a weekend in paradise drilling our brains out at Pike Safe's warehouse in Denver. I joined forces with Jim Gregory, president of Pike Safe; Bob Taylor, president of Safecrackers International; and Marc Goldberg, editor/publisher of *The National Locksmith*, to throw the first annual Rocky Mountain Safecracker's Retreat. We did a small mailing, inviting students to come and spend a couple of days in paradise. And come they did. Over 30 students showed up, from such diverse places as Colorado, Kansas, California, North Carolina, Wyoming, Nebraska, New Mexico, and Louisiana.

We were also fortunate enough to have ace safemen Don Spenard and Doug Sims on board as co-instructors. Completeing the cast, and stealing the show (as usual) was George Stockley of Olympus Corp.

Over coffee and pastries we said our hellos, and George treated us to a brief but mind-boggling demonstration of Olympus fiberoptics used in conjunction with closed-circuit television. Believe me, sticking a scope in a safe and watching the action on a TV screen gives you tingles up and down your spine, but more on that later.

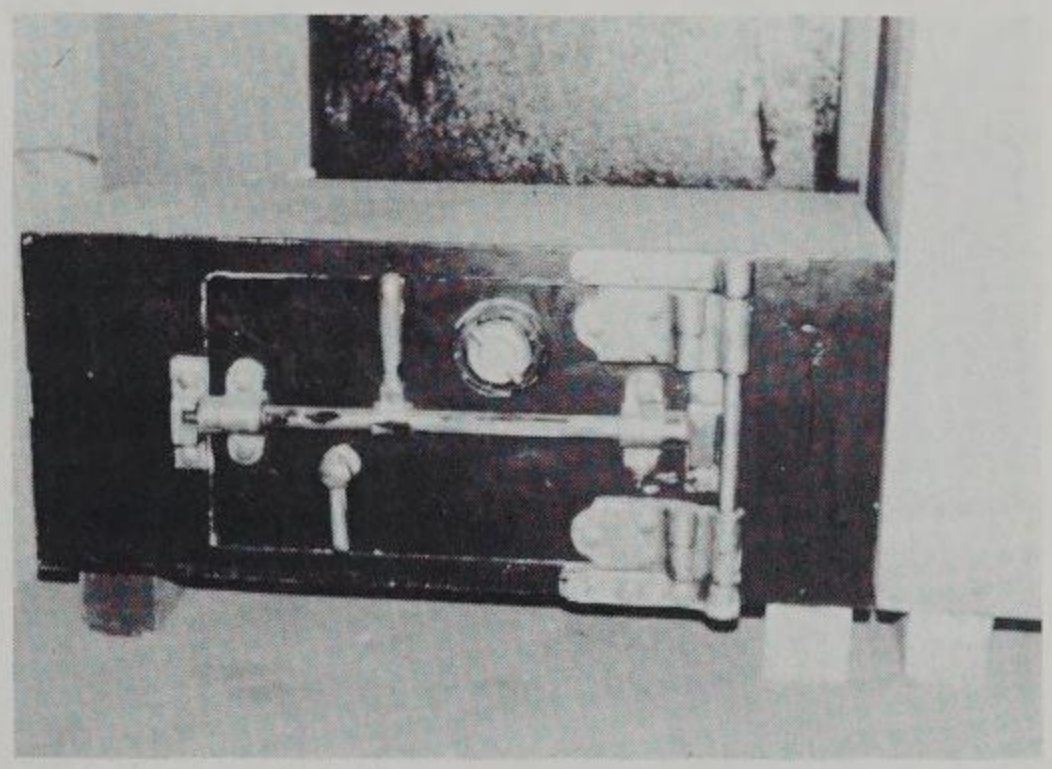
Each student was provided with a little booklet which gave identification procedures and opening techniques for the safes we were about to open. Breaking down into five teams, each equipped for war, we did a sharp about-face and eyed our adversaries. Staring back at us with a smug, false sense of security, were the following punch-drunk bozos: Diebold square door cashguard, Diebold antique jeweler's chest, Fichet-Bauche old style Biltmore, Guardian lug door, Hall's fire safe, Johnson-Pacific round door, Manganese Steel Safe Co. Cannonball, Meilink fire safe, Meilink round door, Mosler fire safe, Mosler Post Office fire safe, Mosler Post Office lug door, Pacific round door, Pacific hinged door, Pittsburg fire safe, Rosengator fire safe, Schwab fire safe, and a Star round door.

With the safes in one corner and the guys in the opposite corner, I urged both sides to have a clean match—no biting, kicking or cursing—and may the better man win.

DING! The bout was on. Almost immediately, drills and steel shavings were flying every which way. On occasion you could see the wince of a near-miss, or the groan of a low blow, but slowly but surely the safes were going down for the count.

We don't have the space to include all 18 openings in this article, so we are going to cover the three most interesting. (For the record, 15 out of the 18 safes were opened with one hole, and of the other three, two had been modified and one had a relocker set off.)

The Diebold jeweler's chest in photograph one is indeed an interesting antique. It is also a rare antique. Those of you who read my November 1986 article in *The National Locksmith* on Diebold jeweler's chests will remember the key to these doors is the fact that the lock is mounted somewhere along the horizontal centerline. This fact combined with the knowledge that the gearing from dial center to actual wheel center is 3½" enables you to pinpoint the precise location of the lock scientifically, and without guesswork.



1. Diebold jeweler's chest.

However, this door is one of the very few exceptions to the rule. The Diebold jeweler's chests (as distinct from free-standing banker's safes) of this size, with the long distance from dial to handle, were equipped with a timelock, which required the lock to be mounted ¾" above center.

With this little known fact in mind, we took off the hinges and pressure bar, and drew a line across the door ¾" above center. Next we measured out 3½" from dial center and marked where this intersected the horizontal line below and to the *left* of the dial. This gave us actual wheel center. The drill point was marked at 65 × 1½", and in photograph two, Brad Lewis is going for it.

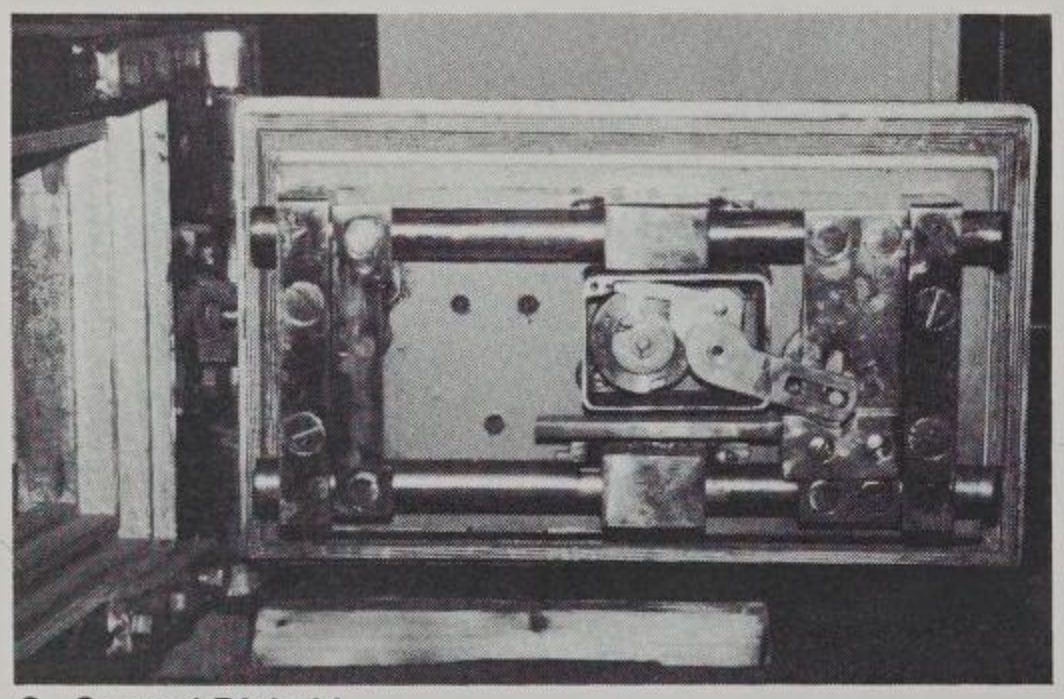
Three Strongarm bits and a little over three inches later, we were into the lock. George Stockley came over, stuck a 6mm Olympus borescope in the hole, hooked it up to a little Sony TV set, and we all watched the screen and dialed it

2. Brad Lewis drilling the Diebold.

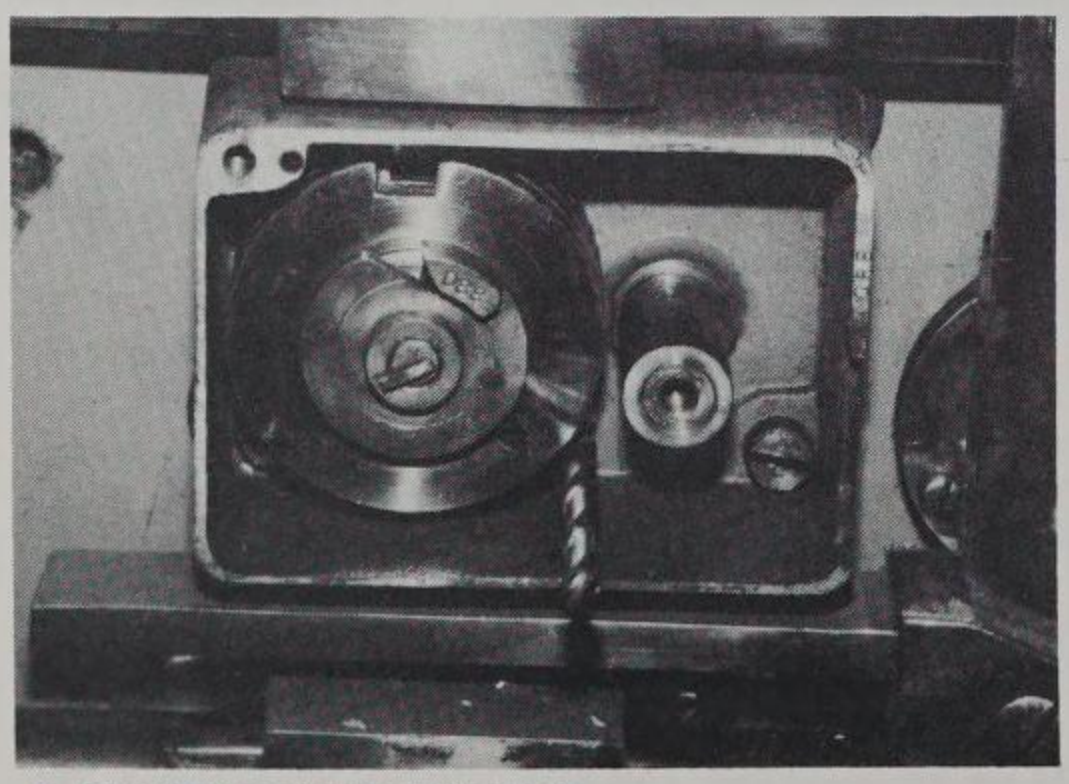
open together.

Photograph three was taken just after Brad swung the door open. The two-movement timelock is missing, but the bar still slides back and forth under the lock. Now you can see why the lock had to be mounted a little above center.

Just to show off a little, I stuck one of Mr. Volosing's drill bits in the hole and snapped photograph four. Absolute perfection.



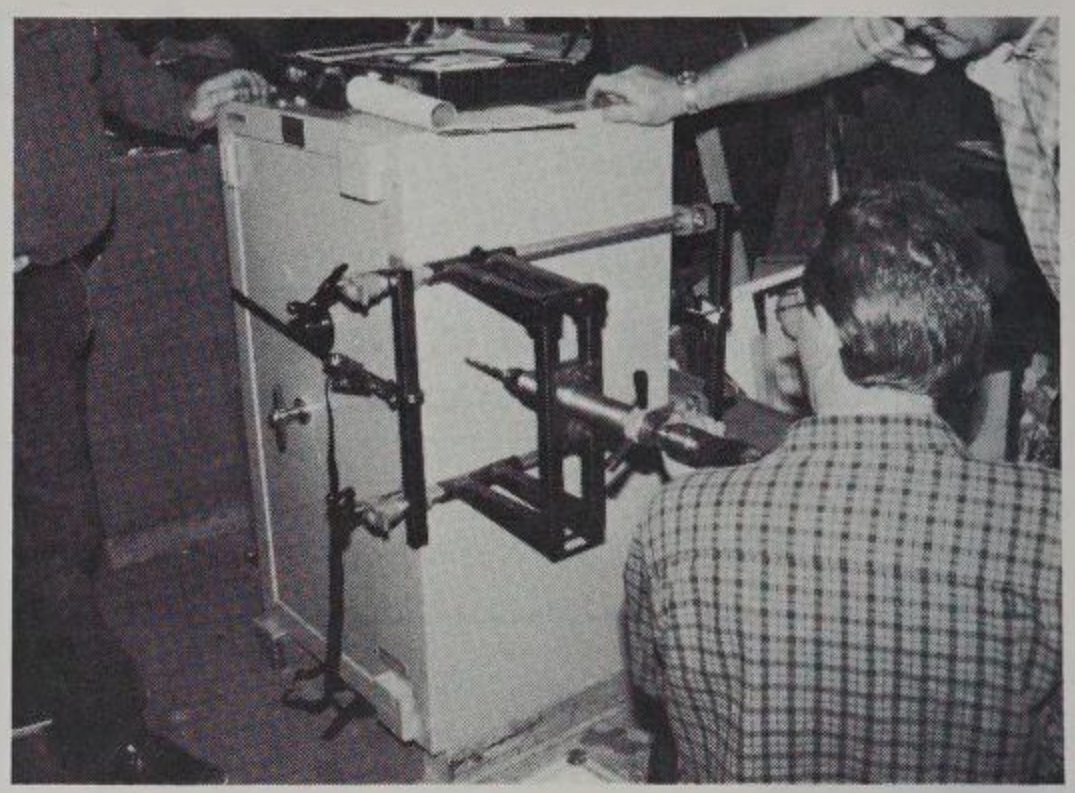
3. Opened Diebold.



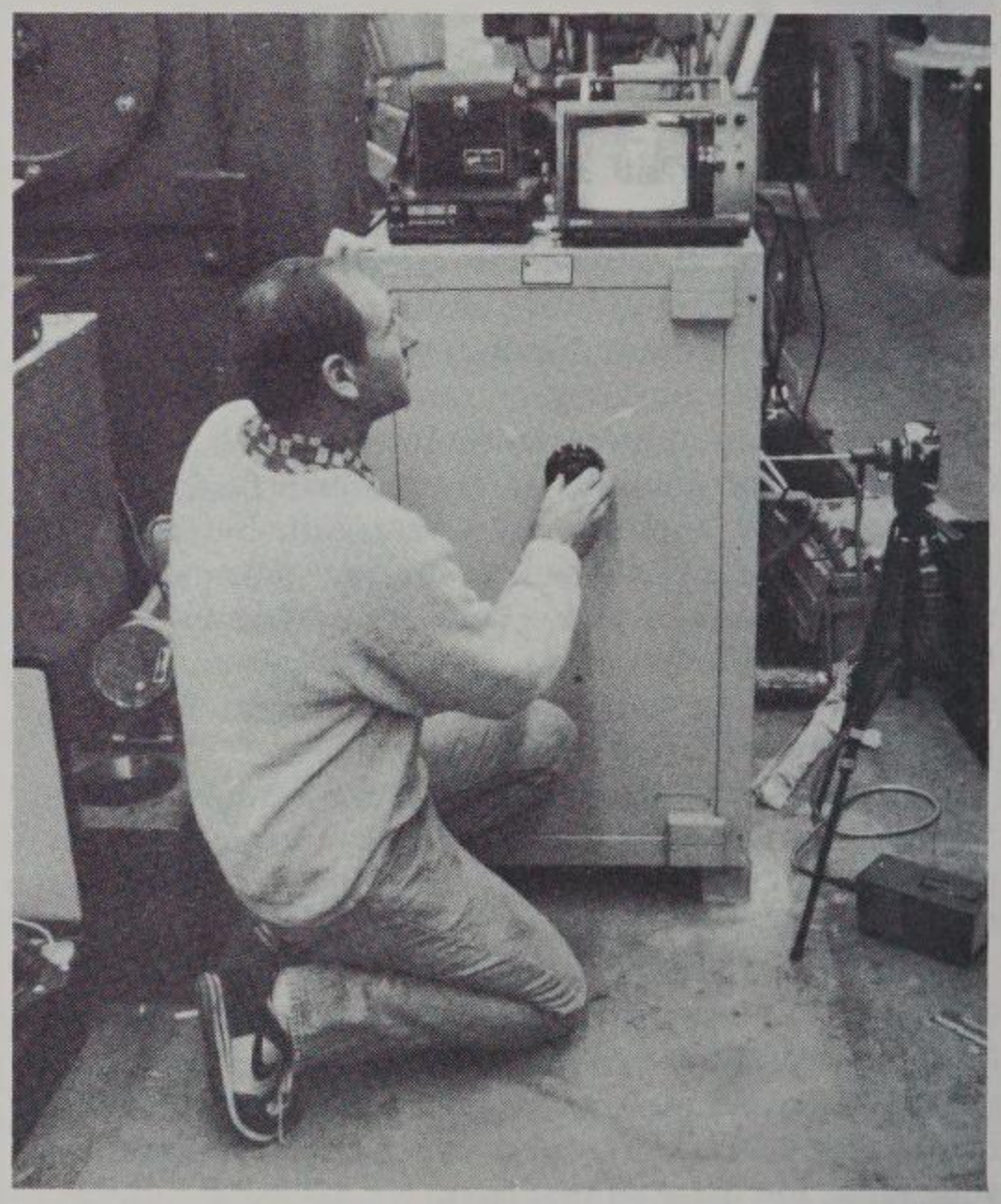
4. Drill bit inserted in drilled hole.

The Fichet-Bauche was interesting. We decided to side-drill the combination lock first, on chance the Keylock might be open.

Step number one: determine the depth. We measured the door thickness through the keyhole, added ¼″ for the air-



5. Art Swearingen drilling the Fichet-Bauche.



6. George Stockley dialing the lock while watching the action.

gap, and ¼″ for the glass. Since this model does not have a mounting plate, or bridge, between the lock and the glass, we now had our depth to the lockcase. We then added ⅜″ for the distance from the front of the lockcase to the center of wheel #2.

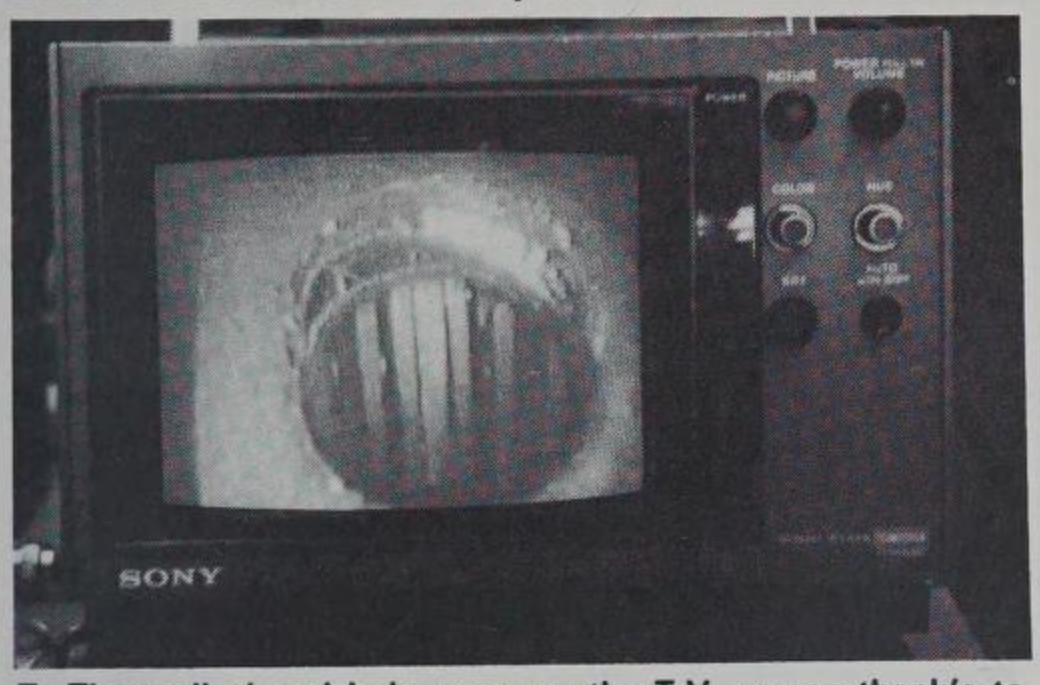
We took this measurement to the side of the safe and center-punched our drill point. Art Swearingen attached the Magnum drill rig and commenced penetration (*See photograph five.*)

After the hole was through the body and into the door cavity, we took a look. We were right where we wanted to be, looking right at the Zamak case of the S & G 8550.

With a 5/16″ bit, we very, very carefully penetrated the lockcase, ever mindful of the glass just a whisker away. Once again, Mr. Stockley came over and hooked up the borescope and TV set. In photograph six, George is dialing as he watches the action on the Sony. Looks like something out of Mission Impossible or James Bond, doesn't it?

Showing off again, I pulled the scope a little out of the lockcase to illustrate how well-placed the hole was, and snapped photograph seven. As you can see, our depth measurement was perfect—the hole in the case exposed all three wheels.

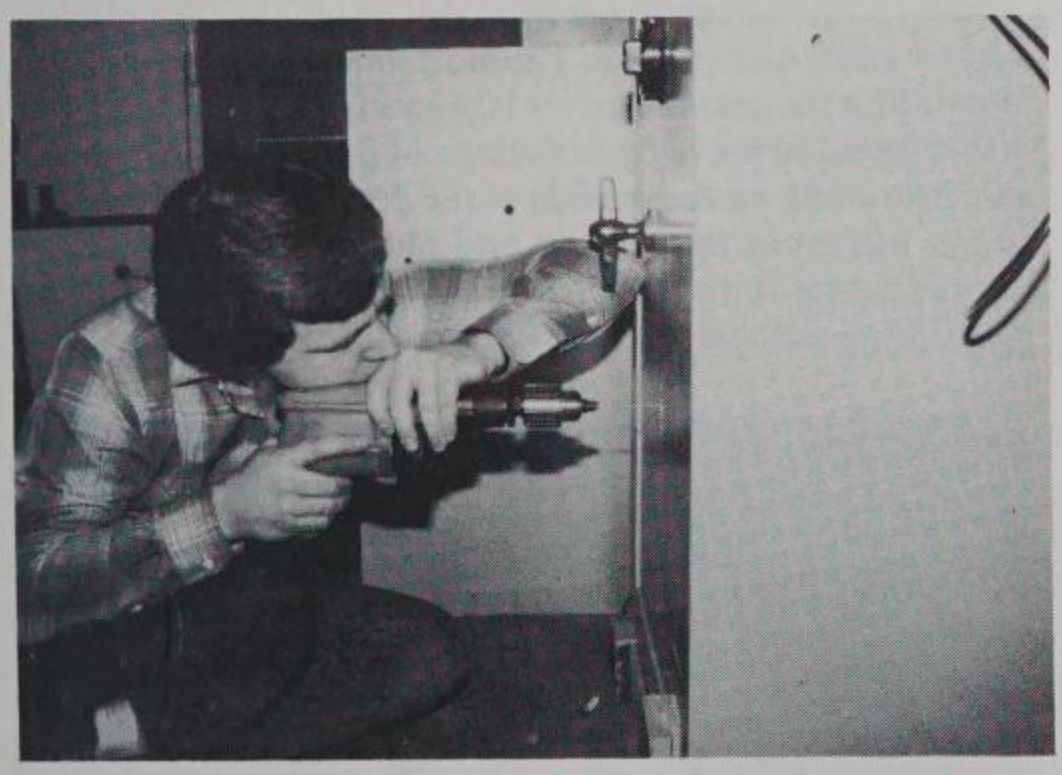
The gates were transferred about 60 numbers around to drop-in, and clunk, the combination lock was open, but the handle wouldn't turn. The keylock was locked. Darn!



7. The well placed hole, seen on the T.V. screen thank's to Olympus Fiberoptics.

There were as many different ideas on how to beat the Keylock as there were people, and I think most of them were valid. I'm telling you some of these guys are extremely sharp. But before another hole was put in the safe, I wanted to try a little trick through the keyhole (*see photograph eight*). It worked.

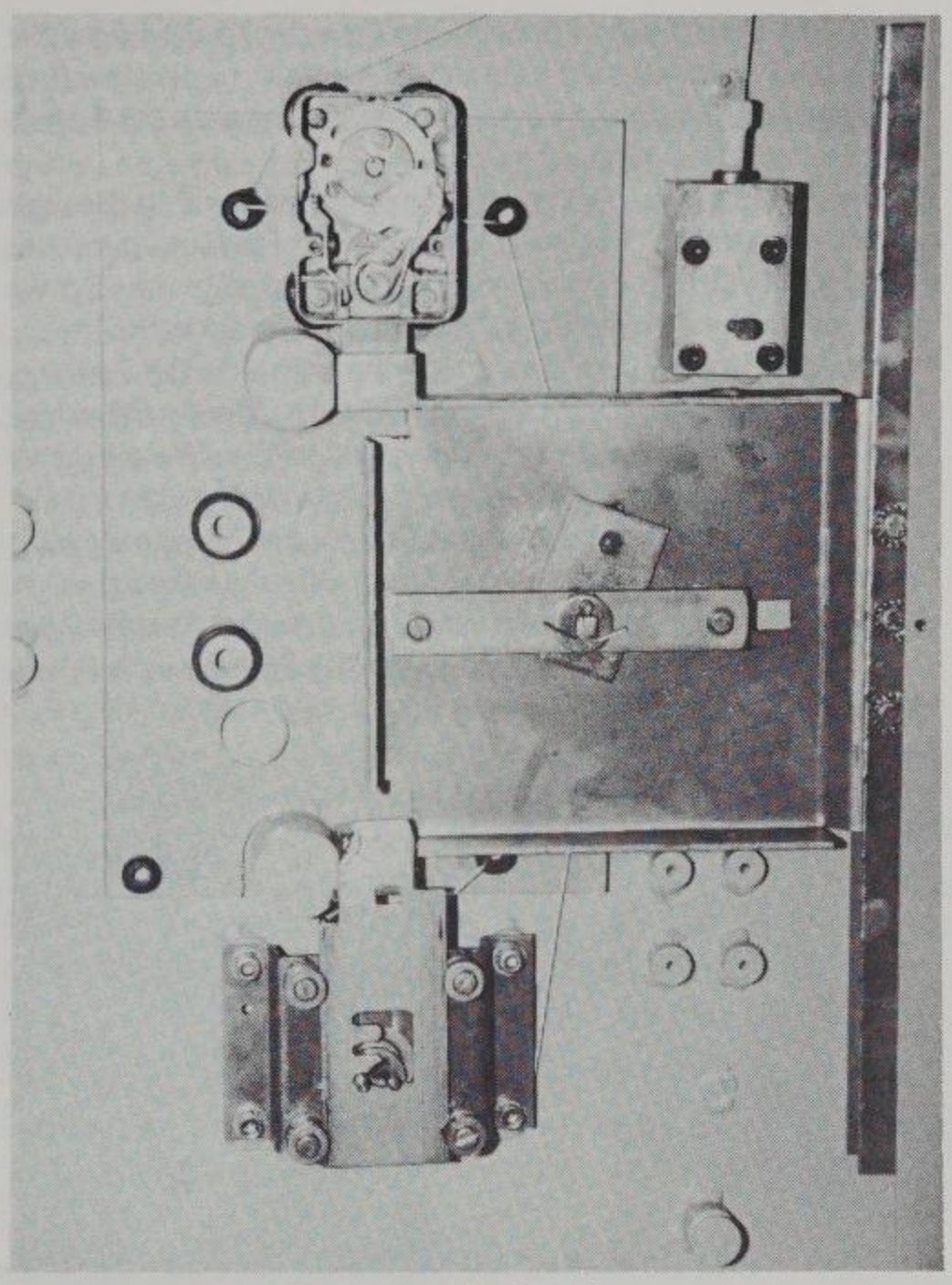
Photograph nine shows the lock and boltwork. The S & G 8550 is mounted VD; the old-style Monopole keylock is mounted VU. Notice the relocker about six inches to the right of the combination lock. The nylon cord that comes off the glass runs all around the door and holds the relocker back. If the glass is broken, or the cord melted, the relocker goes off, preventing the locking bolts from being retracted.



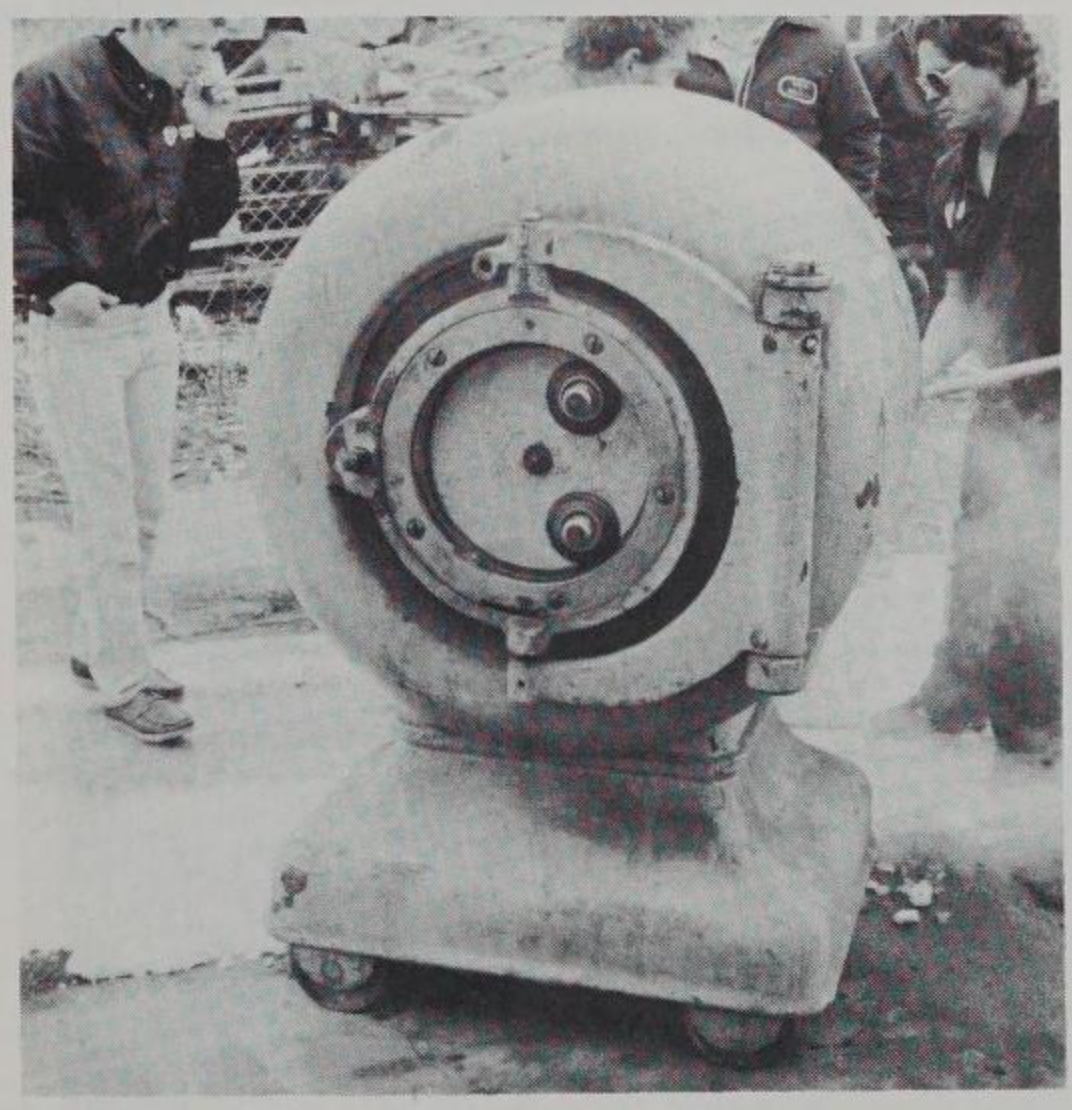
8. Dave McOmie drilling through the keyhole.

If you look closely, you will spot the alternative location for placement of the relocker about six inches to the right of the keylock.

The grand finale of the day was the double dial Manganese Steel Safe Co. Cannonball shown in photograph 10. Contrary to popular belief, you can successfully attack these *through the door*. In fact it is my humble opinion that most double dial cannonballs (Ely-Norris, Hibberd-Rodman-



9. The Fichet-Bauche lock and boltwork.



10. Manganese Steel Safe Co. Cannonball.

Ely, Manganese Steel Safe, New York Manganese) are often *best* attacked through the door. The trick is knowing exactly where to put the hole, but that is material for a future article.

On this particular day, after using just about every drill rig known to man, and firing up the Broco mini-lance several times, we were all feeling a little frisky. It was time for some real adventure.

So Mr. Derring-do himself (Jim Gregory) pulled a couple of 10 foot long burning bars out of his shirt pocket, walked into the nearest phone booth and came out with his Superman suit.

We talked it over. To try and do pinpoint burning through the door with the "big boys" burning bar (as Roy Saunders would put it) is tricky at best, disastrous at worst. So we decided to burn through the back and dismantle the lock.

Doug Sims held an oxy-acetylene torch to the burning bar. Nothing happened for a few seconds. Then with a hiss and a crackle, the giant sparkler came to life. We all backpedaled a few steps and said a silent prayer for Jim.

Fearless Jim charged straight ahead, and in photograph 11 the hot rod met manganese. The fireworks had begun. A few seconds later the manganese really began to spit back, and as you can see in photograph 12, it looked like the Fourth of July.

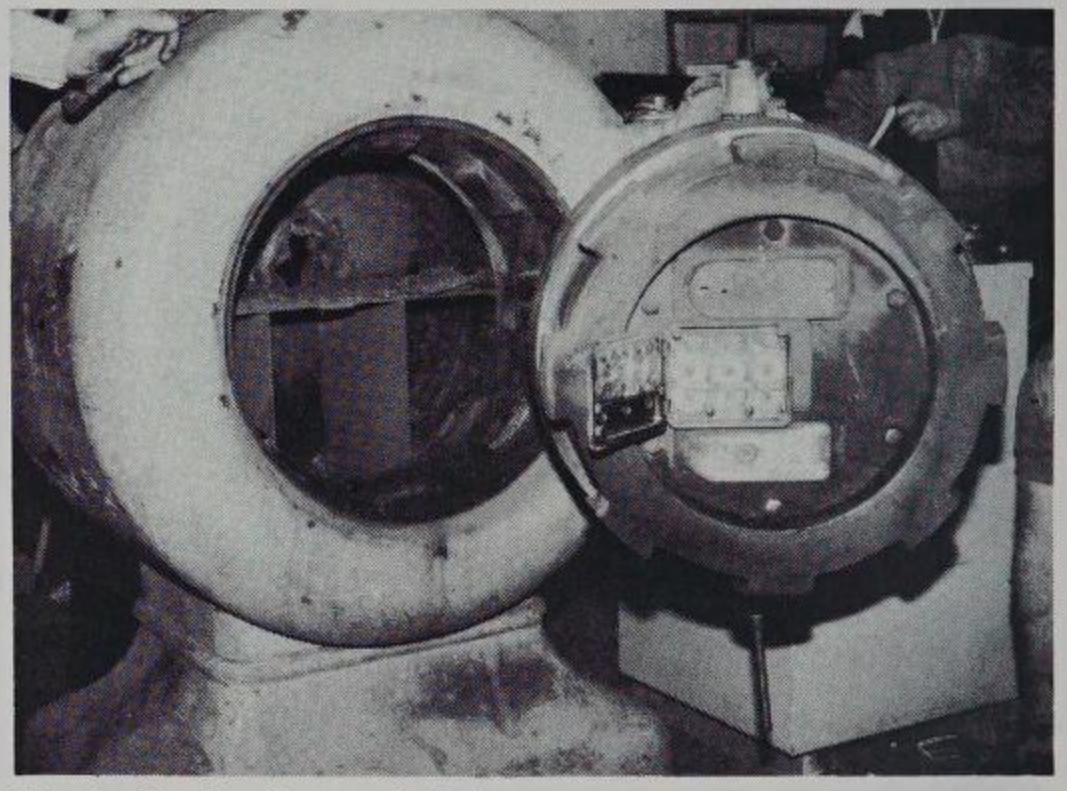
11. Jim Gregory using a 10 foot burning bar on the Cannonball...

12...and the manganese spitting back.

It took several minutes and a good portion of the bar to put a three inch hole through a three inch wall of manganese. Pretty darned impressive. When the smoke cleared, we could see that the dripping slag had caught the driveway on fire! Luckily there was plenty of snow on the ground, so we were able to smother it with snowballs. The cannonball itself was hot enough to fry eggs on, so we gave it the same frosty treatment.

I believe it was Art Swearingen who braved the scorching heat and removed the back cover screw from the top lock. With a clang the back cover landed at the bottom of the safe. You never can tell about those L.O.B.C. back covers. Sometimes they come right off; sometimes they really are "locked on."

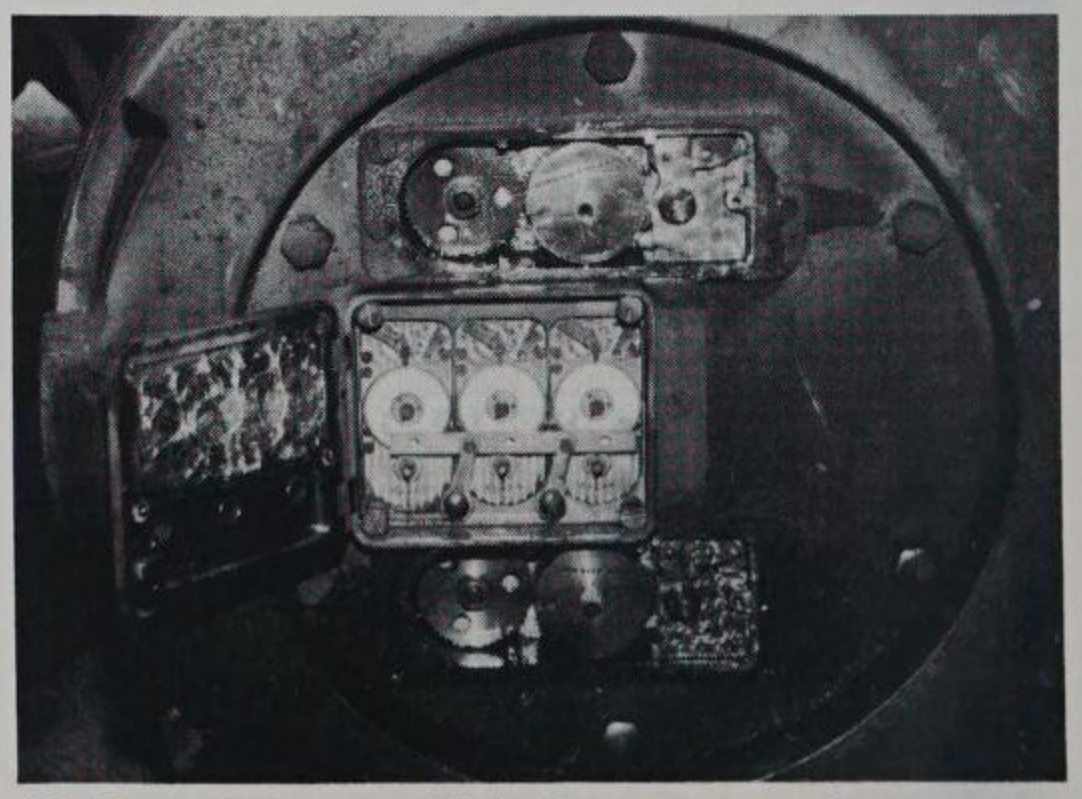
Next, the screw was removed from the wheel post and the curb was unscrewed. The dial was turned right to stop, the little crank was turned counterclockwise, and the bolts were retracted. We rotated the door with the big crank, and the grand finale was over. As the guys swung the big door open, I snapped photograph 13.



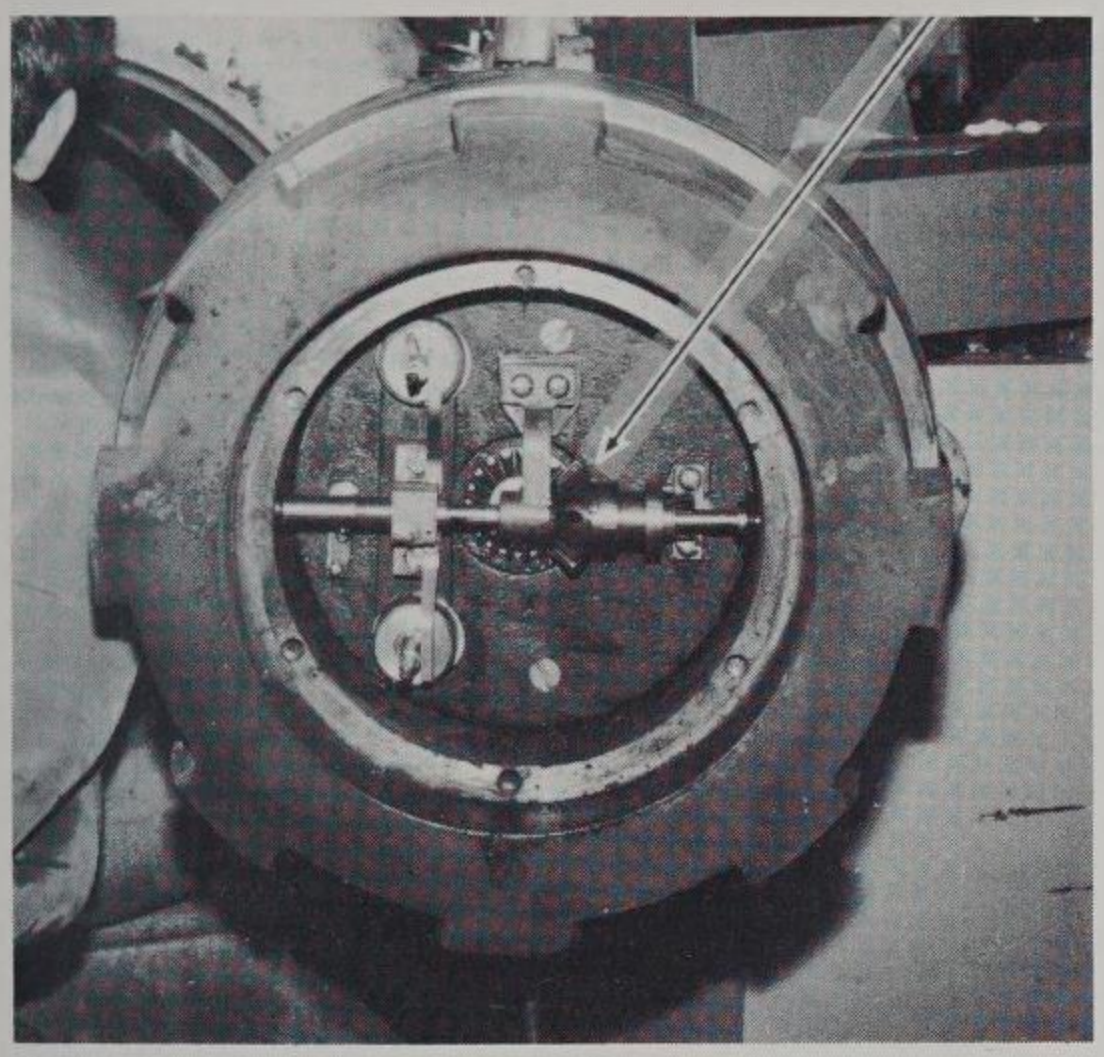
13. Inside the Cannonball door.

Photograph 14 is a close-up with the timelock cover open and the comb-lock back covers removed. The Yale locks have an offset of just under 2″ from dial center to actual wheel center. The fence location is approximately 80. There are no relockers—this big bruiser didn't need 'em!

We removed the round plate on which all the locks are mounted to expose the guts of this monster. (*See photograph 15.*) It's tough to see from this photo, but the mechanism is really quite simple. The most important thing to take notice of is the gear the arrow is pointing to. In this position it is engaged to the big gear facing out which is connected to the little crank on the outside of the door. Turning the little crank will move the bolts in and out. When the gear (*see arrow*) moves to the right it becomes disengaged from the gear facing out and the little crank will free spin.



14. Timelock close-up with back covers removed.



15. Locks exposed—note the gear shown by the arrow.

What controls the movement of the gear? Look about an inch to the right of the gear and you will see a slot that goes all the way around the gear shaft. The combination locks have a vault style linkage with a peg hooked to it that rides in the slot, thus controlling movement of the gear, provided time has run down.

I know this may sound a little confusing, but it's just an overview. In the works for a future series of articles is a complete detailed expose of the three most popular double-dial cannonballs: Ely-Norris, Hibberd-Rodman-Ely, and Manganese Steel Safe Co.

With no more safes to open, a few of us hung around just to chat. As George Stockley was disconnecting all the Olympus gear, we found ourselves wistfully observing the world's greatest borescopes being packed away. You have to use Olympus gear just once to be hooked. I dream of a time, perhaps a decade hence, when every shop will be equipped with this fine of equipment. We all deserve it.

In closing I want to thank the Pike Safe crew for a job well done; Don Spenard and Doug Sims for their invaluable assistance in providing instruction and leadership; Marc Goldberg, Bob Taylor, and Jim Gregory for co-sponsoring the event; and a very special thanks goes out to George Stockley and the Olympus Corporation for their continued support. ■

I can't say enough good things about George Stockley or Olympus. They were fantastic to work with, and they treated me like a king. And I treat my Olympus scopes like they are made of glass, which of course, they are.

Opening A Mosler Class 5

"My camera goes everywhere with me. I photograph tall ones, skinny ones, short ones, fat ones...I bet I have more pictures than does Hugh Hefner."

by Dave McOmie

These days locksmiths and safemen are exchanging safe photographs at a rate comparable to that of baseball card fanatics. By logical extension, I guess that makes us fanatics too, in our own field of fanaticism. Fine by me. I am proud to be a card-carrying member of "The Society for Fotographin' Fanatix and Safe Mechanix."

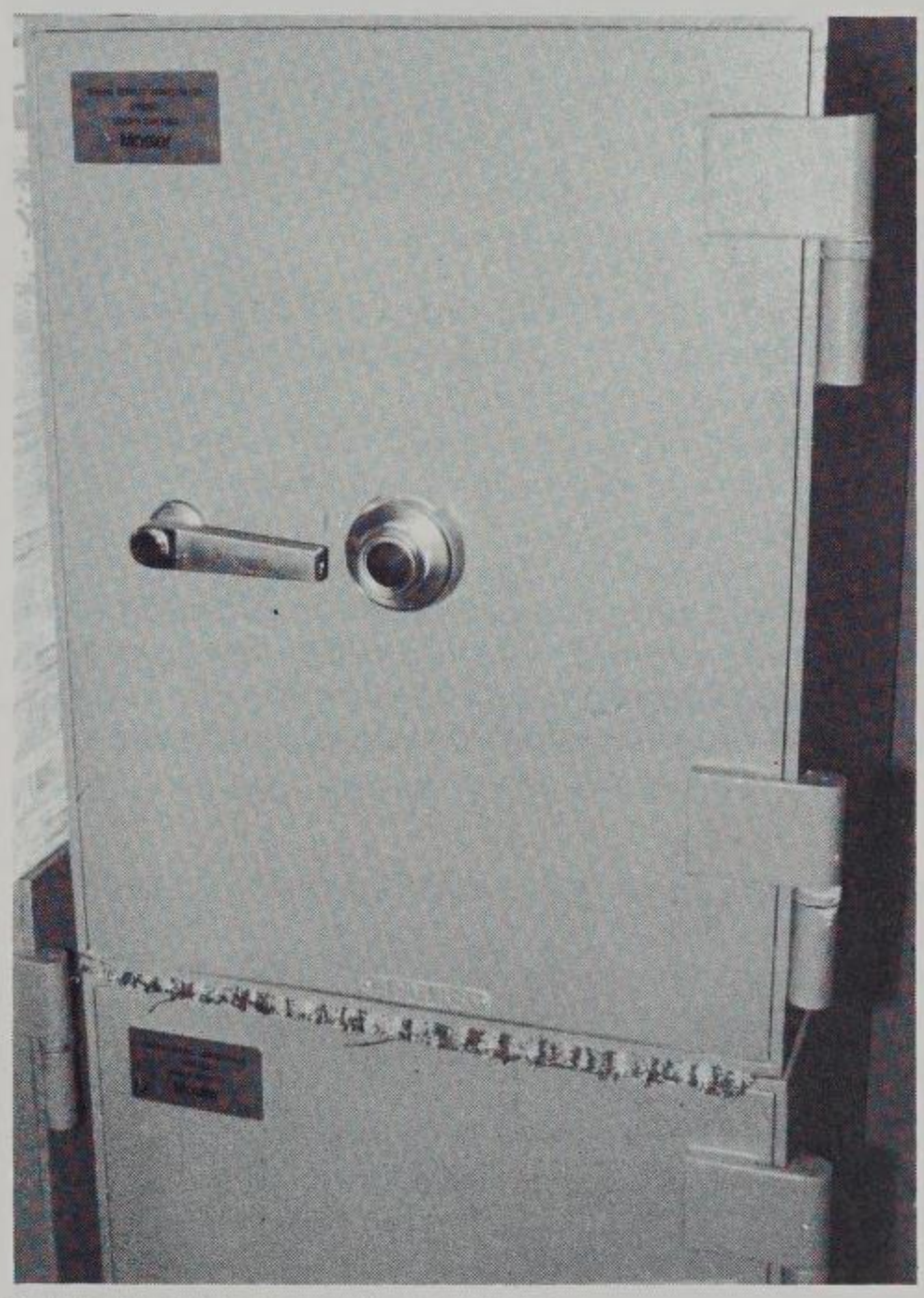
My camera goes almost everywhere with me, and I am truly an equal opportunity picture taker. I'll photograph tall ones, short ones, skinny ones, fat ones, young ones, and old ones, regardless of origin or color. And I'll bet I have more pictures in my collection than Hugh Hefner does in his!

From my conversations and correspondence with many of you, I find there exists a sense of apprehension, a real reluctance to whip out a camera and start snapping away on a customer's safe.

I am frequently asked if I ever run into opposition from customers about the camera. The answer is seldom. I have a few pet pat responses I'd like to share with you. Hopefully, a few of these, or your own variations thereof, will help open a few doors—and ease a few of those misunderstandings. Try one of these answers the next time a customer balks at the sight of your camera: 1) If you ever get locked out, I want to have the information we need to *save you money*. 2) By photographing the step-by-step, I am protecting myself from malpractice liability. 3) I am compiling information for a trade manual on safes. 4) I'd like to do an article on this work of art of yours. 5) I document *all* my work, period. You want your safe open, I get my pictures.

Most of the time, depending on the situation, one of the first four will bring the desired result; but the subject of this month's article caused me to resort to secret weapon #5. This one can be confrontational, and it's not for everybody, nor can it be used on every objector; but it sure worked good on the Morton Downey type who assaulted me as I snapped photograph one, of a Mosler Class 5 Security Container.

This call was an emergency, and loudmouth wanted to know why I was wasting time and not getting to work. Very politely I responded to this Pablum Puker with every variation of 1 through 4 that I could think of, but he wasn't having any of it.

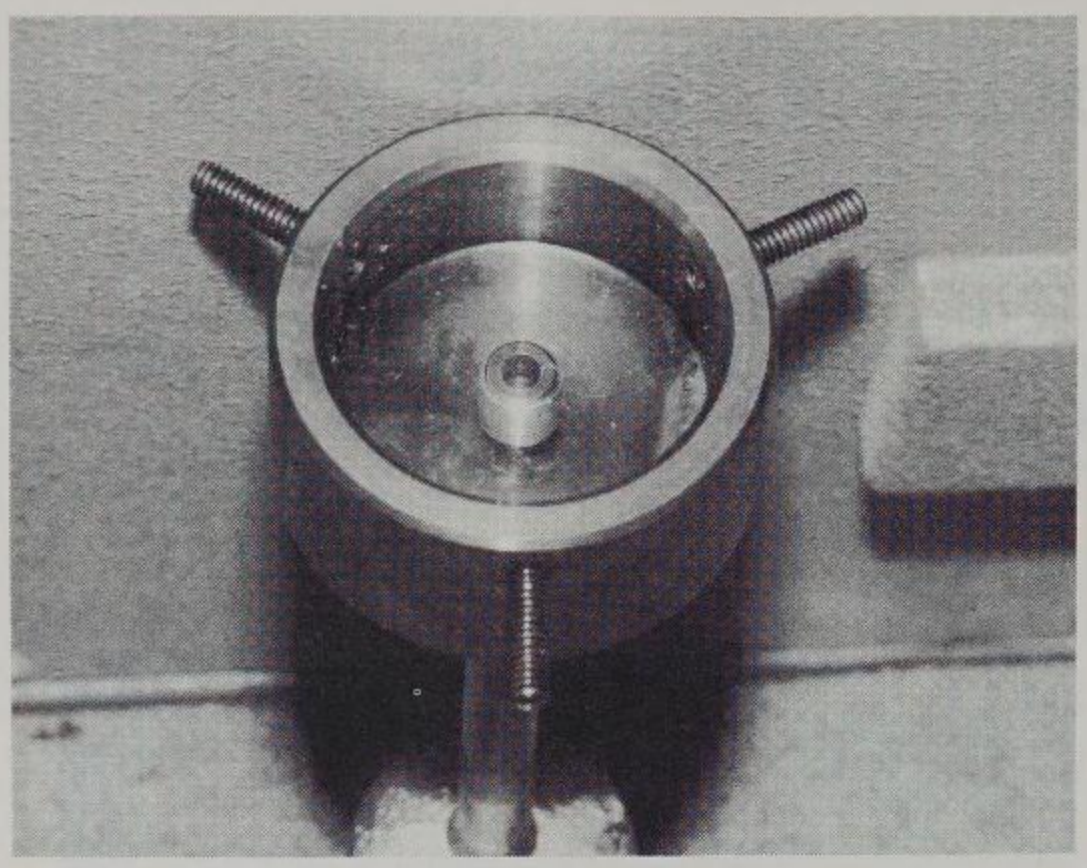


1. Mosler Class 5 security container.

Then he tried to pull rank on me, insisting that I hadn't received permission from the proper authorities and what did I *really* want the pictures for anyway?

Well, that made me mad, so I pulled photographs of an identical container out of my shirt pocket, thrust them in his face and let him have #5 to the solar plexus. Loudmouth finally zipped it, and I got back to work. Mosler's security containers, aside from size variations and a few minor boltwork variations, have only one important difference that you should commit to memory: The Class 5, which has the handle to the *left* of the dial, has a RH mouted lock. The Class 6, which has the handle *below* the dial, has a VD mounted lock. The locks most commonly encountered are the Mosler MR302; S & G 8400; and occasionally an S & G 8500. The dial is the obvious tipoff. The MR302 goes click click as you turn the dial; the 8400 series lock has an inner knob that rotates ¼ turn clockwise at 0; the 8500 series lock pushes in at 0.

Turning the satin chrome spyproof Mosler dial produced



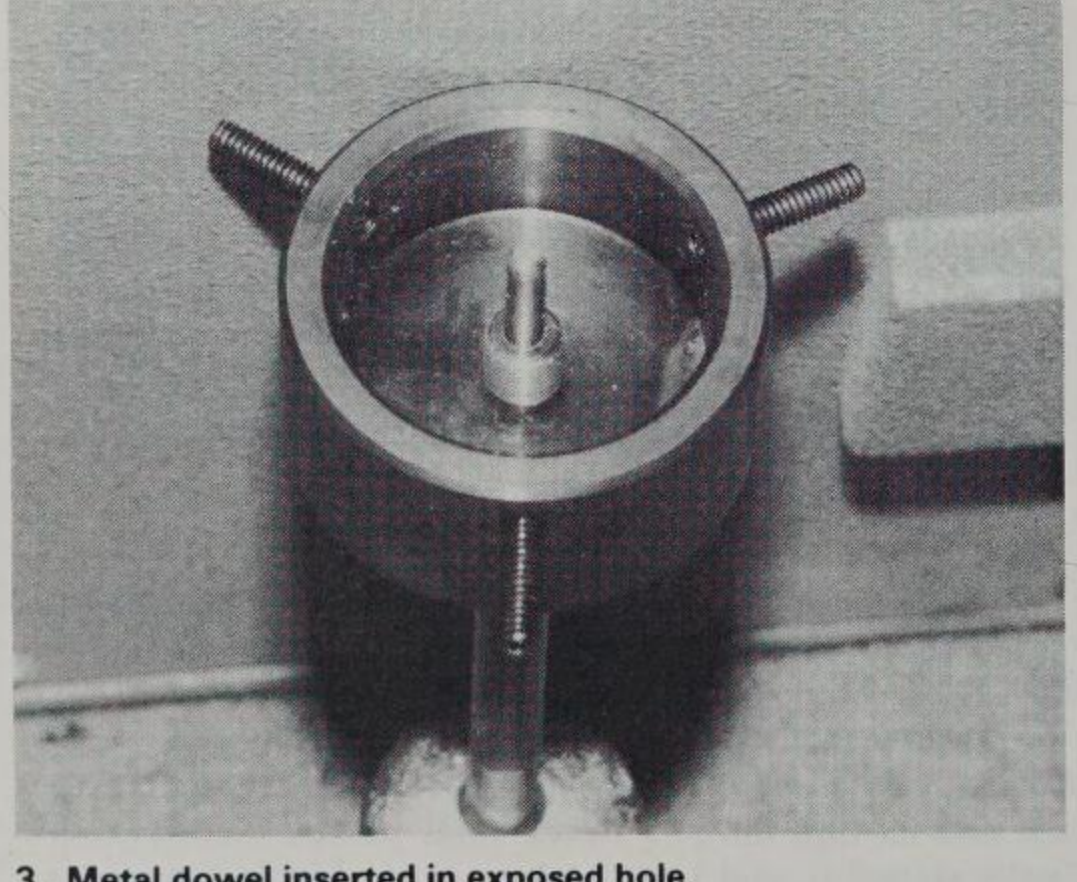
2. Hole exposed after dial was pulled.

the click-click of an MR302. I drilled a ¼" hole through the black plastic center of the dial. I grabbed my dial puller, turned it over and exposed the hole in the end of the shaft (*see photograph two*).

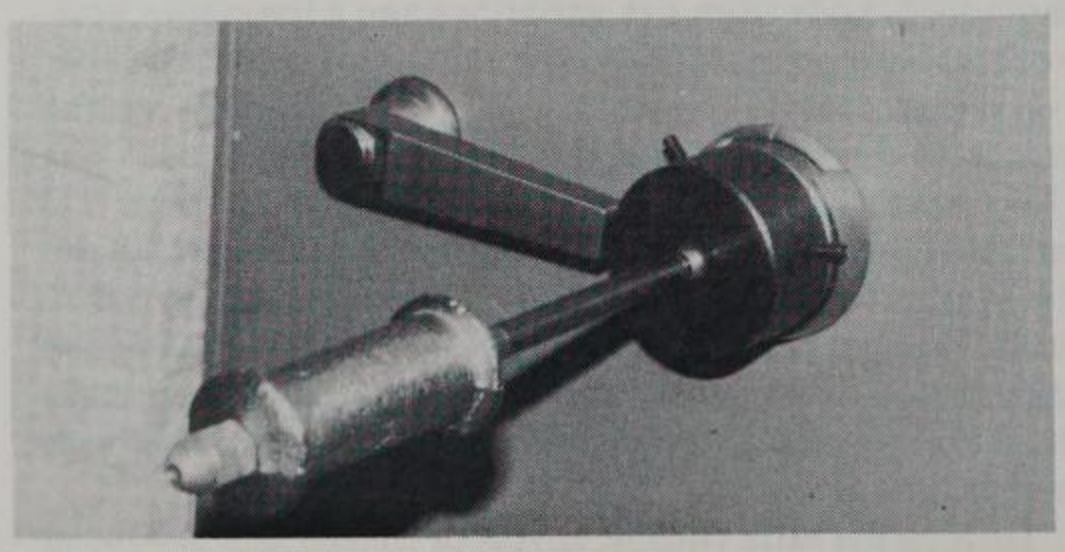
A small metal dowel was inserted in the hole (*see photograph three*).

The cup was attached to the dial (*see photograph 4*) with the metal dowel going through the hole in the black plastic and butting up against the spindle. I held the cup firmly with my left hand, and with the aid of a small vice-grip, my right hand turned the cap nut on the other end of the puller.

The dial came gently off the spindle, with none of the



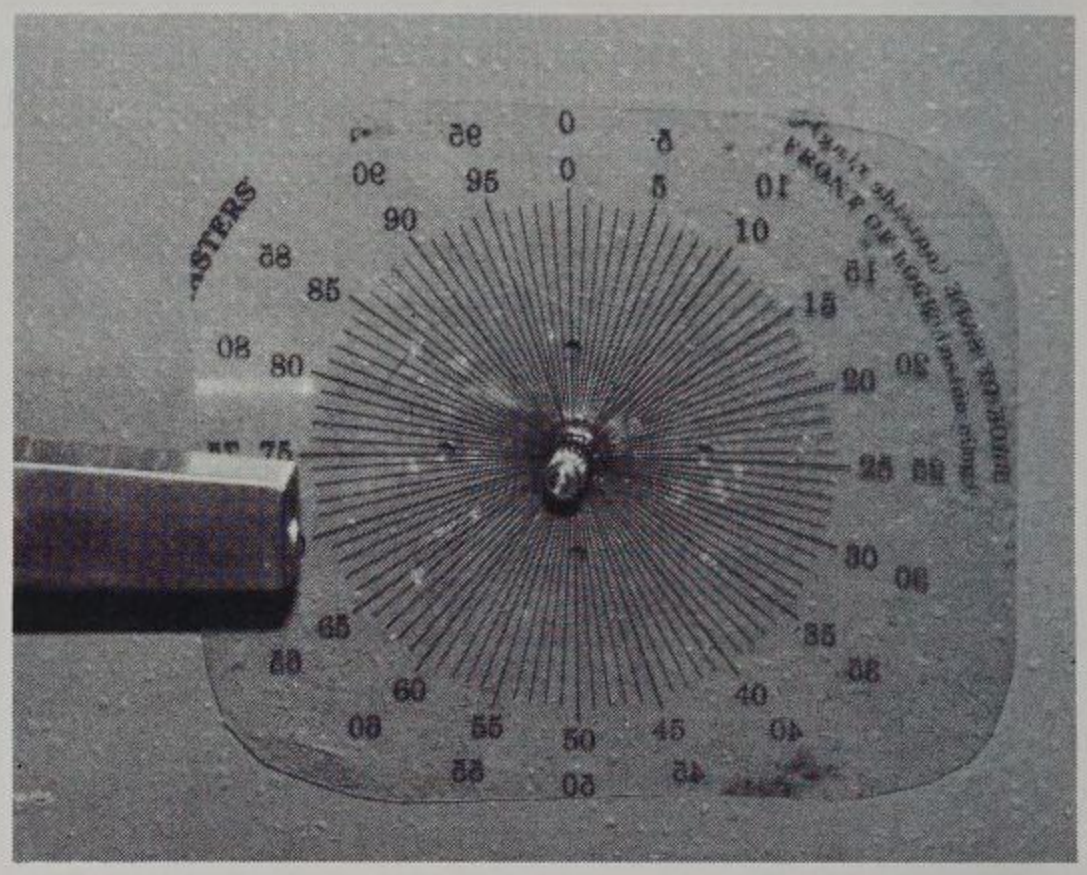
3. Metal dowel inserted in exposed hole.



4. Cup attached to the dial.

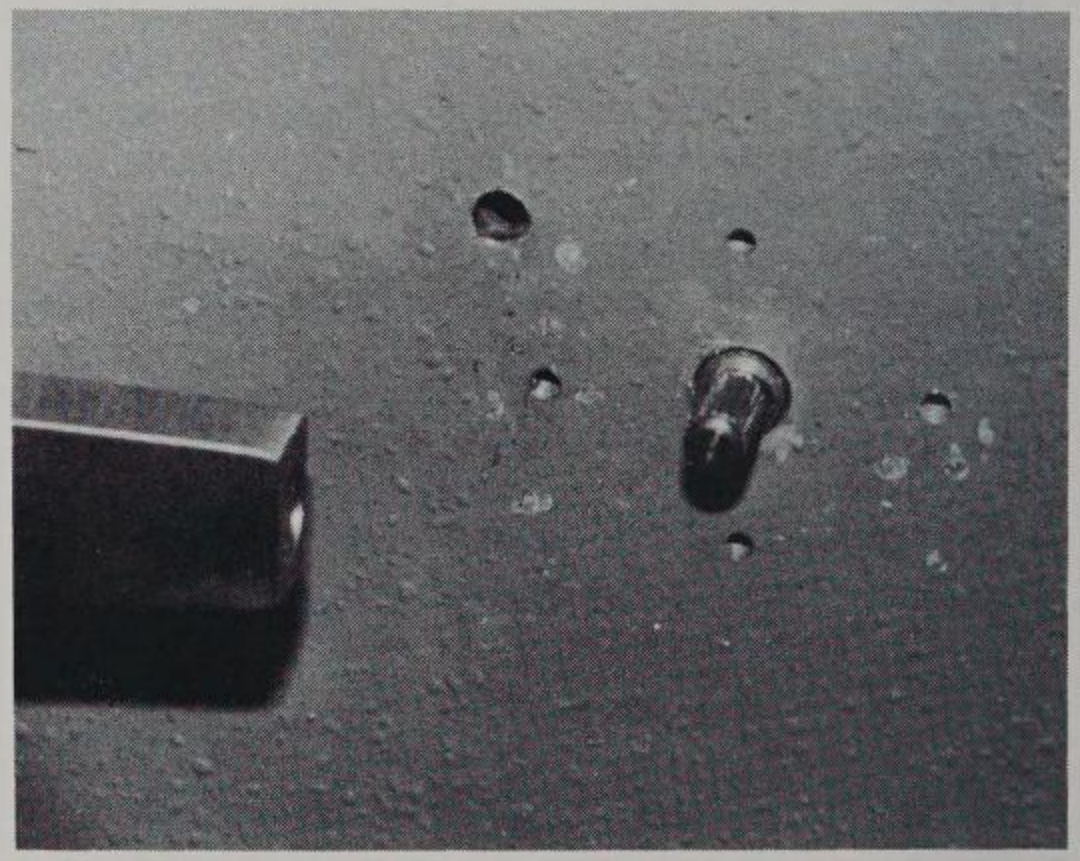
lockcase crushing slams that occur when trying to slam off a chrome Mosler dial. The dial is quite reusable—more on that later.

After removing the dial ring, I installed a Lockmasters template over the spindle (*see photograph 5*) and center punched at 85×1½". This is my favorite spot to scope a 302.



5. Lockmasters spindle installed over the spindle.

Five minutes later the ¼" hole was completed (*see photograph six*). I inserted my scope, lined the wheel gates up under the fence, retracted the lockbolt, turned the handle—the safe was open.



6. Completed drilled hole.

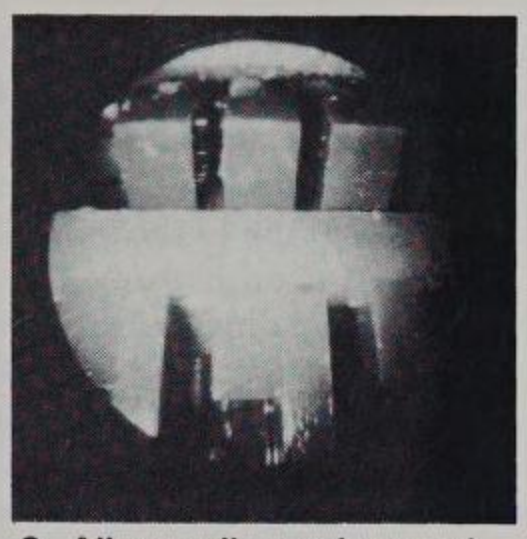
To show you what the view inside a 302 at 85×1½" looks like, I have pulled a couple of photographs from my files. These were taken by Mike Hourigan and George Stockley, both from Olympus, and I after a seminar in Philadelphia.

In photograph seven, none of the gates are under the fence.

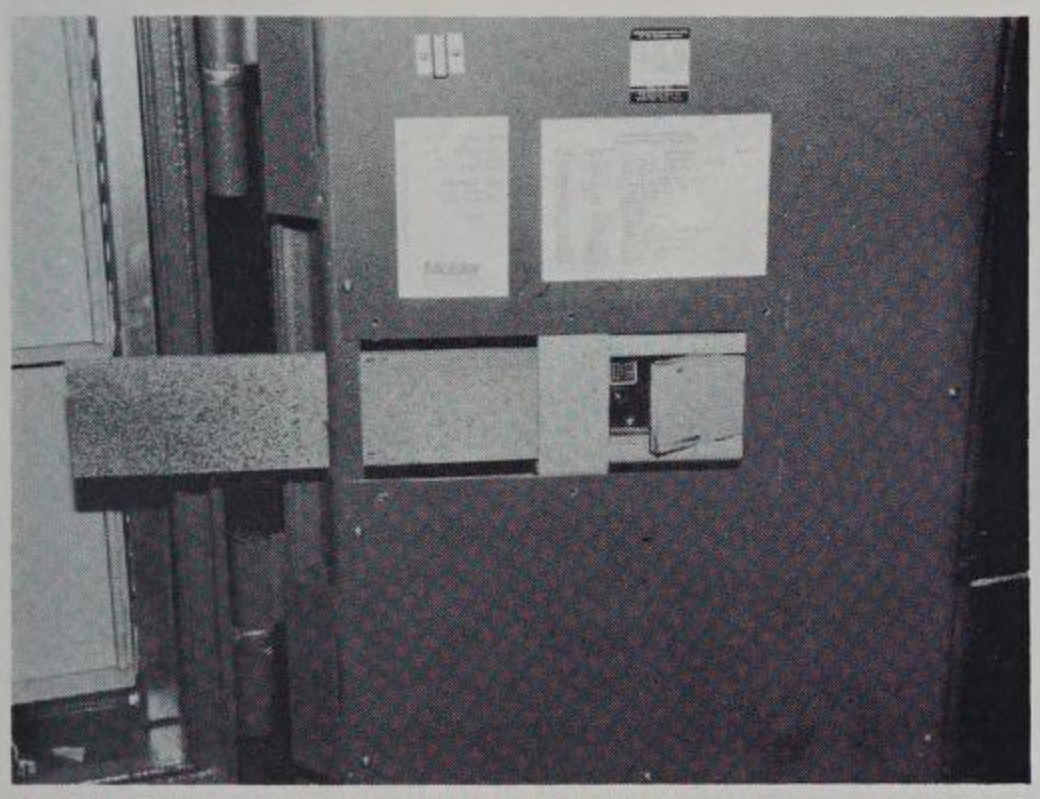
In photograph eight, the gates have all been lined up and the fence has dropped in. A pretty sight, isn't it?

Photograph nine shows the back of the door with the small inspection cover removed. With this cover removed, the long piece of hardplate can be slid to the left, which allows us to remove the smaller piece of hardplate, and we finally have access to the lock. This is normal procedure for a combination change.

7. A view inside a 302 from the drill point. No gates are under the fence.

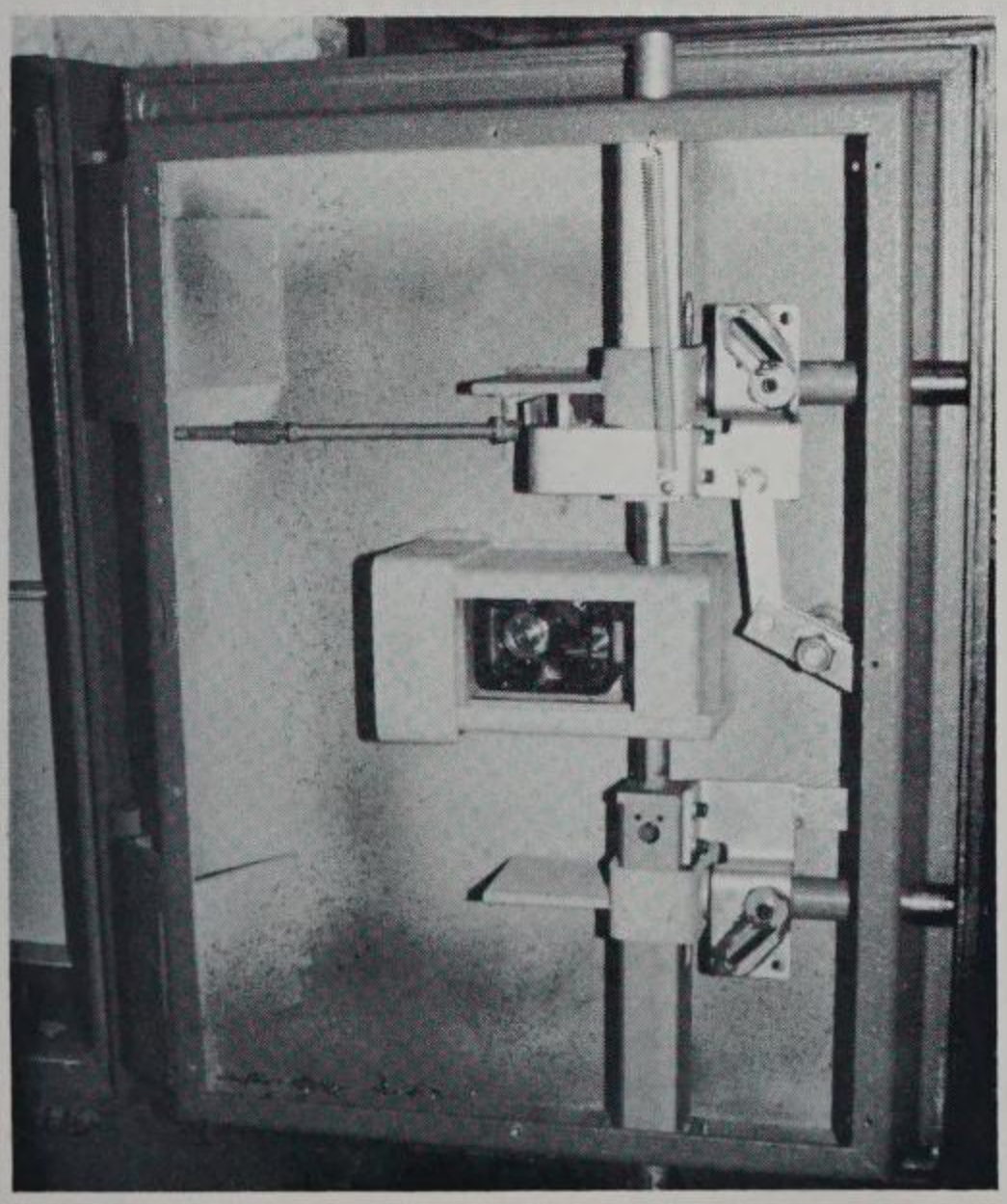


8. All gates line up here and the fence has dropped in.



9. Door back with inspection cover removed.

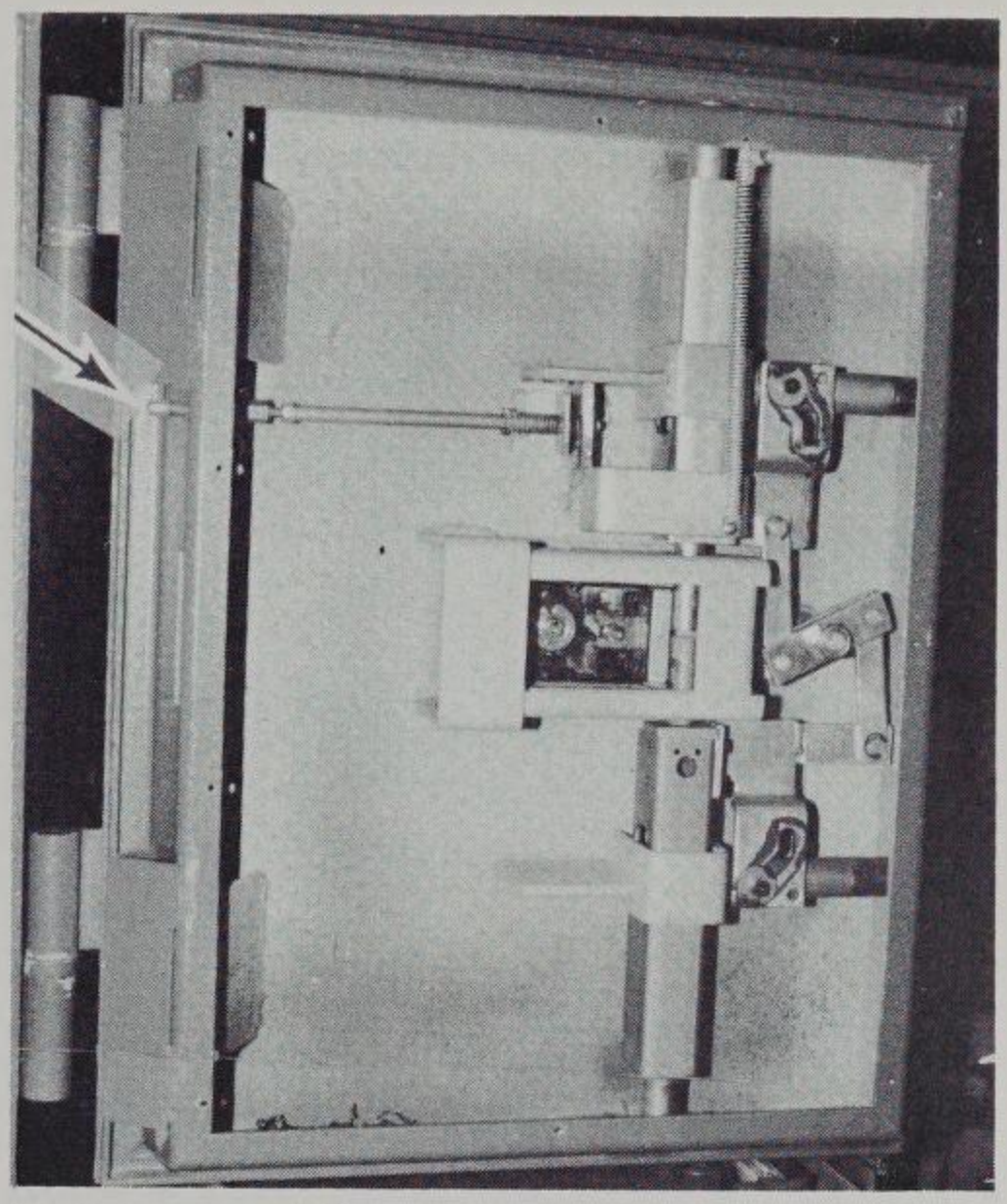
In photograph ten I have removed the back panel, exposing the boltwork for our inspection. As you can see, there are two side bolts, a top bolt, and a bottom bolt. Notice the



10. Back panel removed to expose boltwork.

spring at the top of the door, which automatically throws the bolts when the detent is pushed in.

In photograph eleven the bolts have been retracted. The arrow is pointing to the detent, or what Mosler calls the

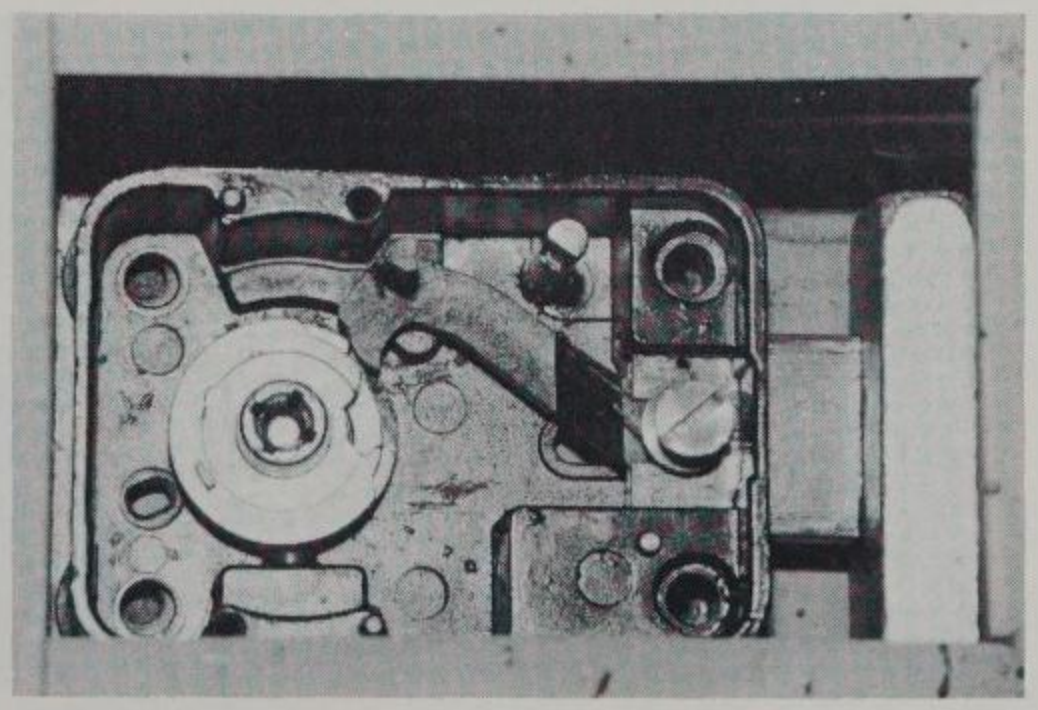


11. Bolts retracted. Note the detent or interlock rod.

interlock rod. You may also notice there appears to be a box completely encasing the lock. Right you are. And the entire box is constructed of hardplate! As a general rule, this is true of all GSA safes, files and vaults; kind of lessens the appetite for side and tip penetrations doesn't it?

Photograph twelve tells the story of the opening. Just above the middle of the lever you can see my scope checking things out.

Missing from this photo are the mounting screws and spline key. I forgot to put them back in before snapping this photograph, but I haven't forgotten to mention Mosler's habit of using Loktite red. This is the permanent stuff. You can usually loosen three out of four mounting screws in no time, but the fourth one can be a real bear, requiring the use



12. Inside the lock. Notice the scope inserted through the drill hole, the aluminum block and the plastic lever.

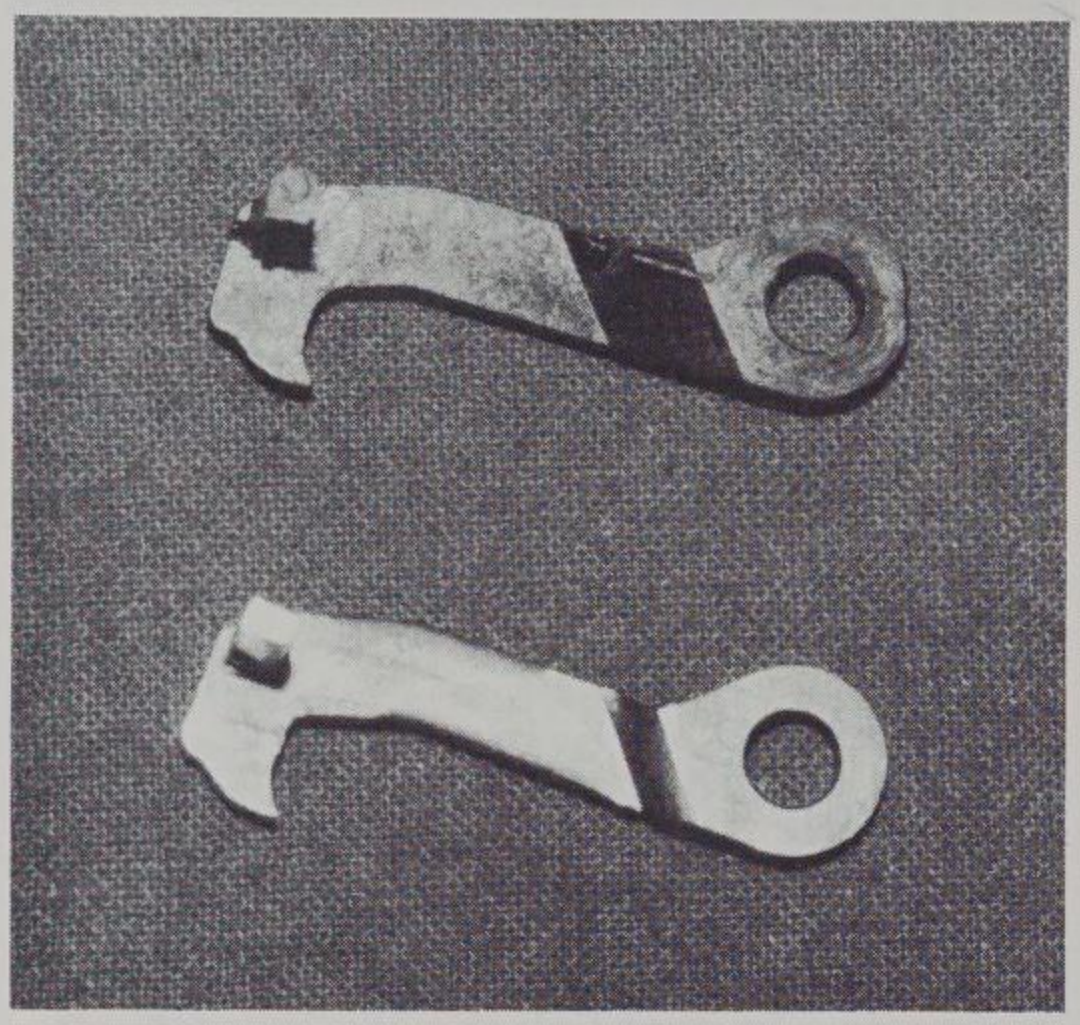
of an impact wrench.

Notice the aluminum block attached to the end of the lockbolt. This is what actually blocks movement of the bolts. When it is retracted, the handle can then be turned, retracting the bolts.

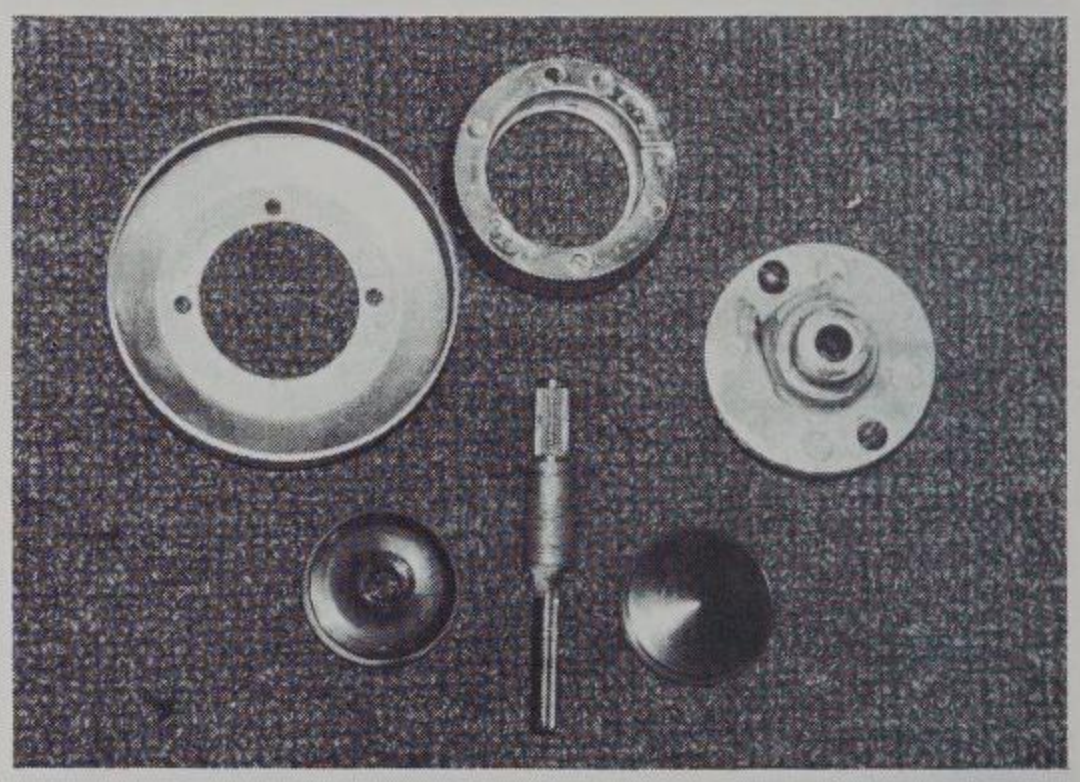
One more thing to notice in photo 12—the lever. This is the infamous black plastic (polycarbonate) lever that got recalled almost before they left the factory. The lever noses were breaking off left and right, so Mosler discontinued them and began exchanging brass levers for the plastic ones. To my knowledge, you can still exchange them with Mosler at no charge, but I am keeping mine—you know, collector-mania or something like that.

Photograph 13 shows a polycarbonate lever on top, and a brass lever on bottom. The nose of the brass lever has a stainless coating to help weather the shock of being constantly "punched in the nose" by the shutter driver. This coating is absent in Group 2 levers, and is the easy way to tell them apart.

Photograph 14 shows the various components of the dial. Below left is the black plastic center piece I drilled through; below right is the new one I replaced it with. Mosler's part number for these is 80819. ■



13. Polycarbonate and brass lever.



14. Dial components.

I'll always wonder if articles like this one had an impact on Uncle Sam's decision to upgrade GSA containers. I said in the article that I drilled this Mosler in under five minutes. Well, that won't happen to the new Red Label containers. Rats. I should have kept my big mouth shut!

Penetrating A Bank Safe

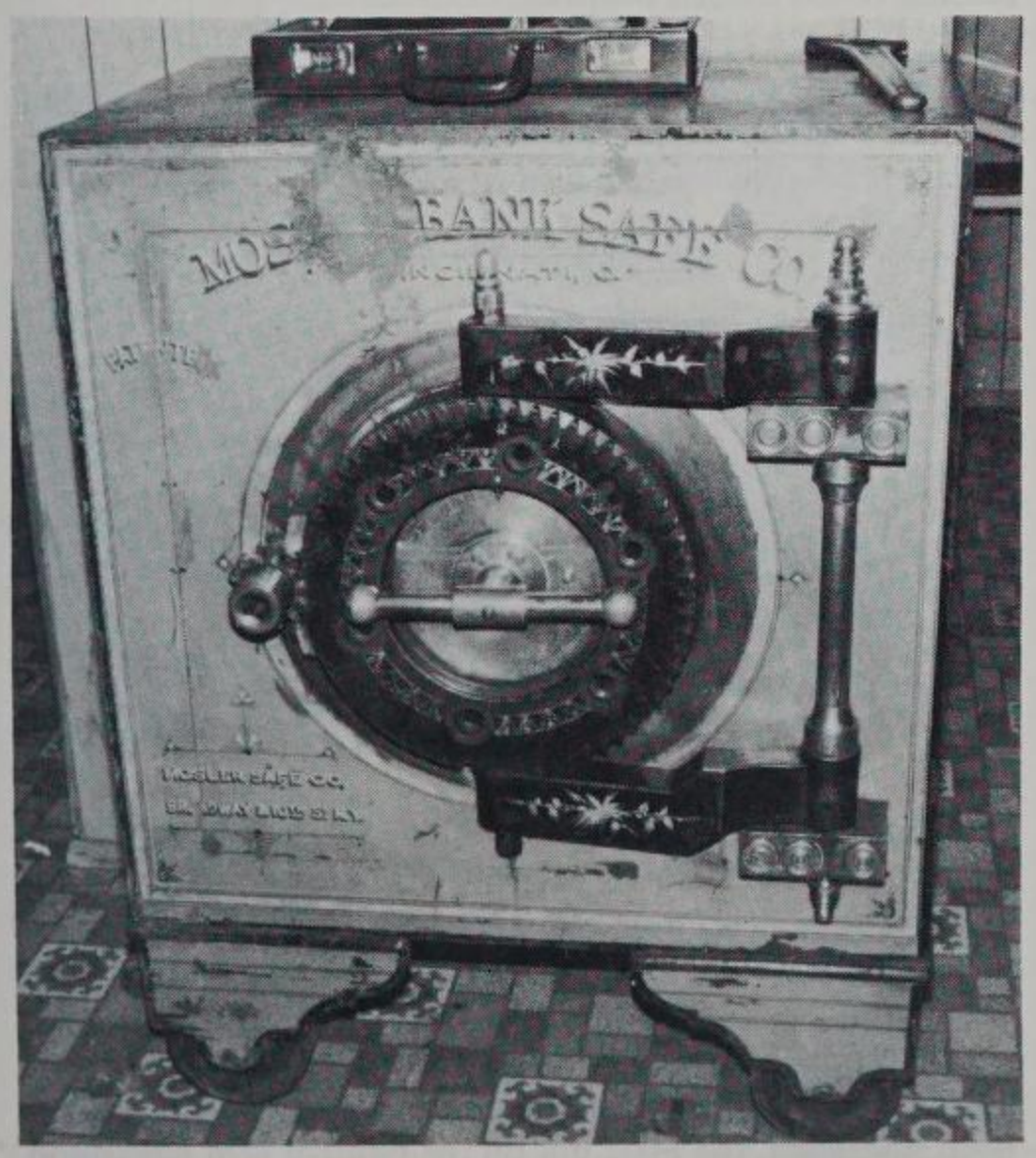
"We had already jiggled, jarred, pounded and pried to try and overcome a minor malfunction. The door didn't budge so we obviously had a major malfunction."

by Dave McOmie

One of the more interesting openings I did last month came from Robblee's Safe & Lock in the Seattle-Tacoma area. John Paterson called and sent me out with his head safeman, Pat Fahey, to meet the Mosler screw door Bank Safe shown in photograph one.

Photograph two is a close-up of the very unusual 200 number dial. Looks like one of Fred Flintstone's toys, doesn't it?

With the dial removed, as in photograph three, four large holes are exposed, through which we can see the wheels! The arrow is pointing to the fence at the 3 o'clock position. I should note that the gates can all be lined up and the lock opened in about a minute.

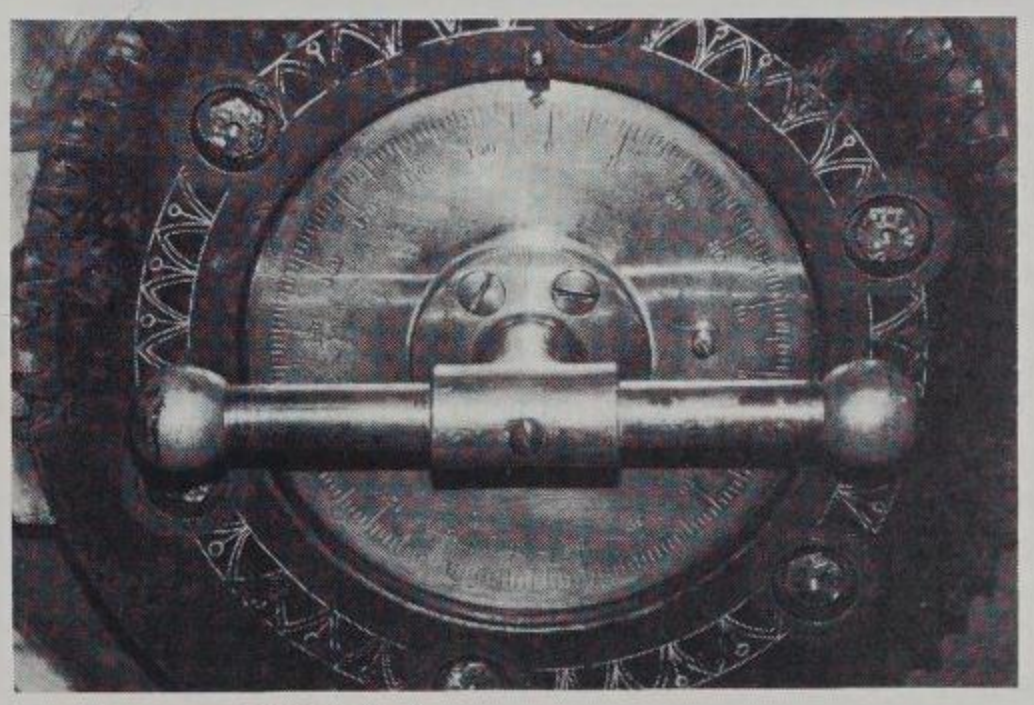


1. Mosler screw door bank safe.

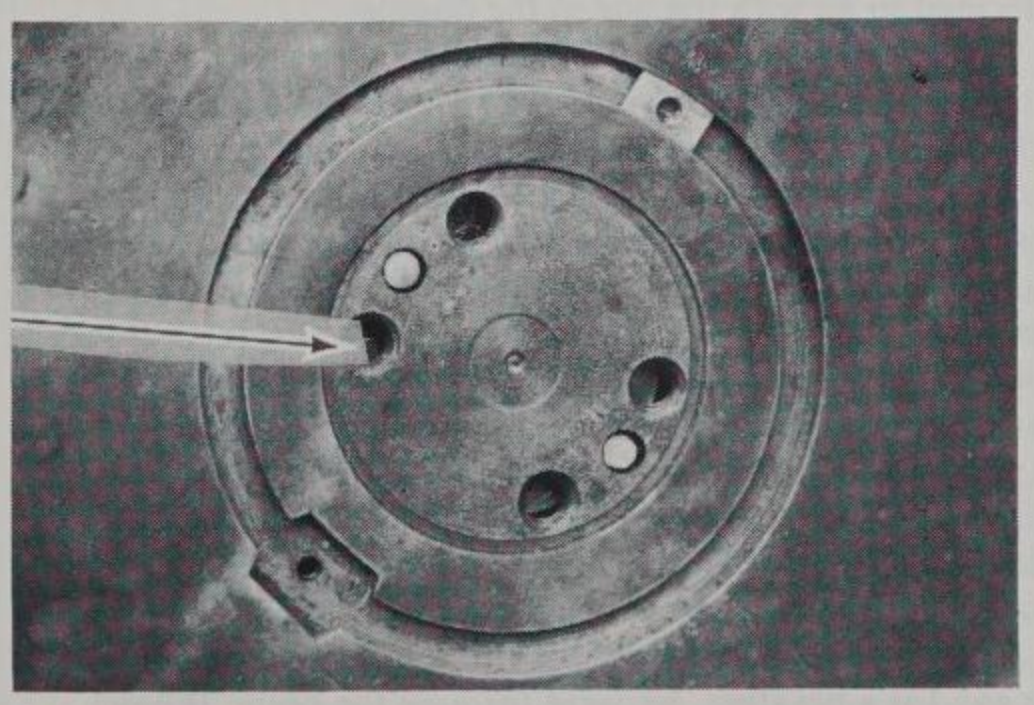
Removing the bearing plate exposes the open-case lock, whose function is to block rotation of the door (*see photograph four*). Under normal circumstances, once the timelock has wound down, retracting the primary locking bolt, it is a simple matter of dialing the combination to retract the combination lockbolt. You can now crank the door open.

I show you these things for the purpose of demonstrating how this safe works. Pat had already determined that the combination lock was working fine, and that time had run down. Pat, who is an excellent safeman, had already jiggled and jarred and pounded and pried and performed all the usual tricks for overcoming a minor malfunction. Since the door still refused to budge, we were obviously faced with a *major* malfunction, probably somewhere in or around the timelock.

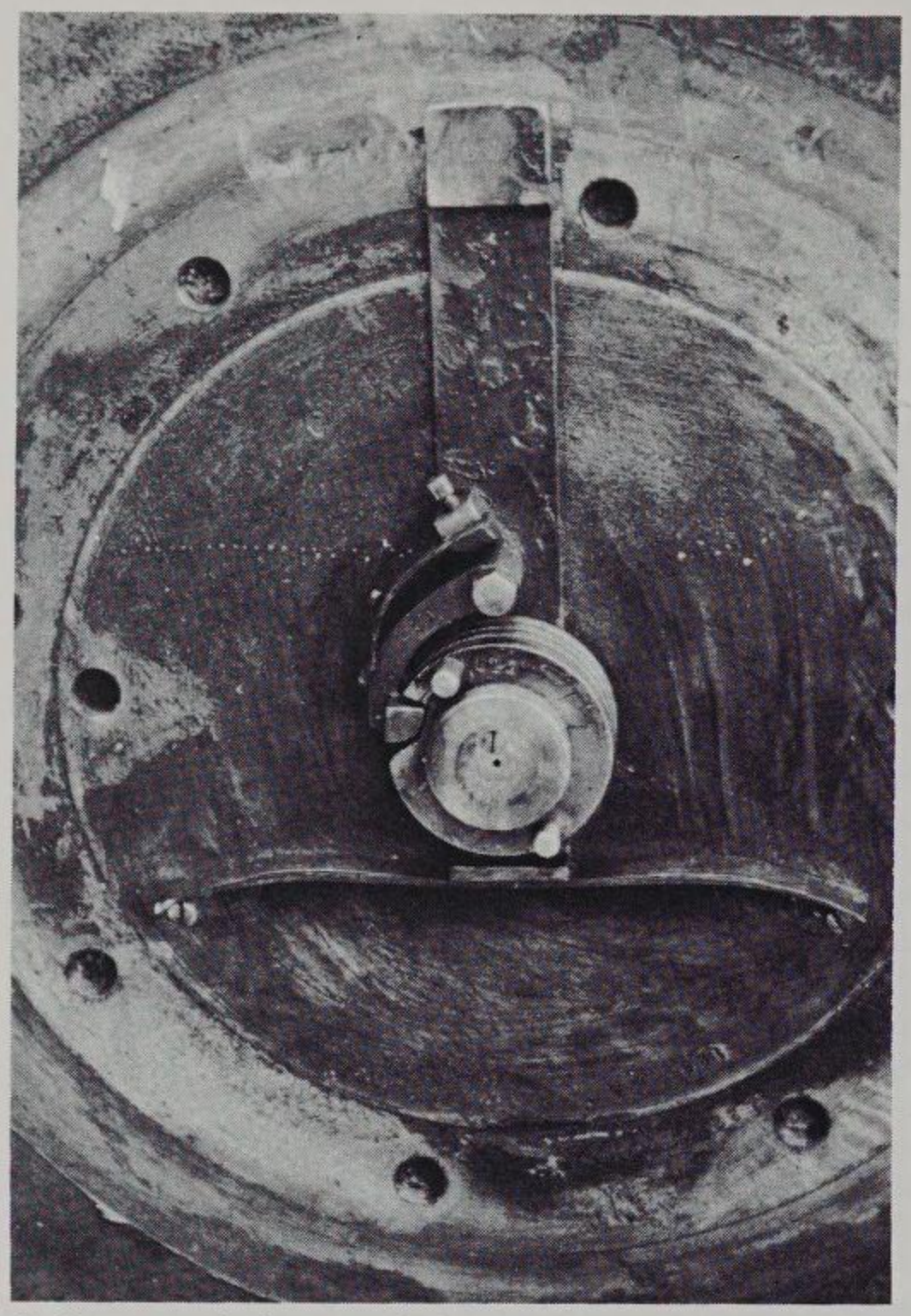
In determing a drill point I was faced with a couple of



2. Close-up of #200 dial.



3. Dial removed.



4. Open-case lock exposed when bearing plate is removed.

problems. The other screw door bank safes I had seen were equipped with *two* locking bolts, instead of the usual one that we are used to seeing in Mosler's screw door cannonballs. Yet the customer insisted that his bank safe had only one; he had owned the safe since before I was born, and by God there was one, and only one locking bolt.

Was I going to believe him or my photographs of apparently identical safes? Normally I put very little faith in a customer's technical knowledge, but on this rare occasion the customer was able to convince me that he was right. And as we will soon see, he was.

The other problem was deciding how far back to drill, given that I had recorded locking bolts at three different depths. Being a firm believer in the value of the compromise. I decided to go with the one in the middle.

With all the difficult decisions out of the way, Pat and I attached the Magnum drill rig to the safe and commenced drilling. Having never drilled a bank safe before, I wasn't sure what to expect, and was genuinely surprised when the Strong Arm drill bit started pulling out shavings almost immediately. The outermost lamination was certainly not manganese, but as we progressed through the extra thick body we hit a few hardened laminations that may very well have been manganese. I really can't say for sure—my limited experience with the Magnum rig makes this kind of judgment hard to make. I need to develop the sense of "feel" with the Magnum that I have with leverage rigs like the Lee, Strong Arm, Collins, and Black Bart.

Anyway, nine inches (yes, 9!) with only a single two-inch air gap for a breather, we were through the body. Whew!

Adrenalin pumping, I inserted my direct-view Olympus scope into the hole, flicked on the 150 watt light source, took a peek and let out an adrenalin-deadening groan. We were too far back and had missed the locking bolt. Rats!

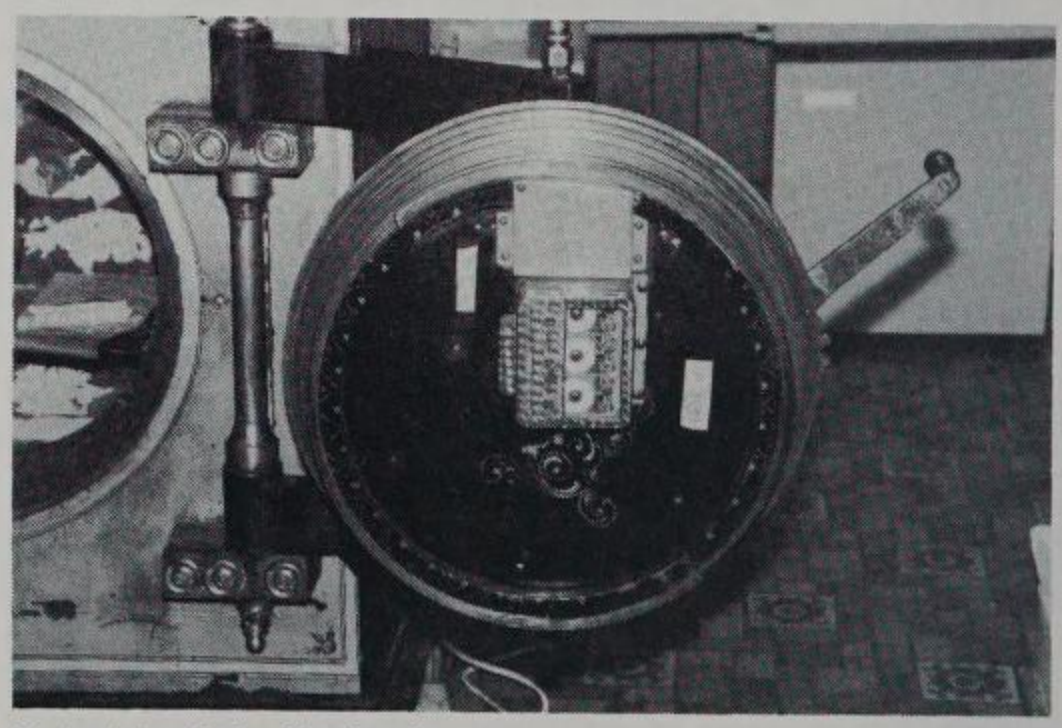
Through the scope I was able to determine how far off we were. We repositioned the Magnum and started the second, and final, hole.

At one point I jumped down from my perch atop the safe and snapped photograph five of Pat and the proud owner, making good progress deep into the top of the Mosler.

5. Pat Fahey and the owner of this Mosler safe.

This time we were right on the money. I pushed down on the locking bolt and Pat cranked the door open. Yabadabadoo!

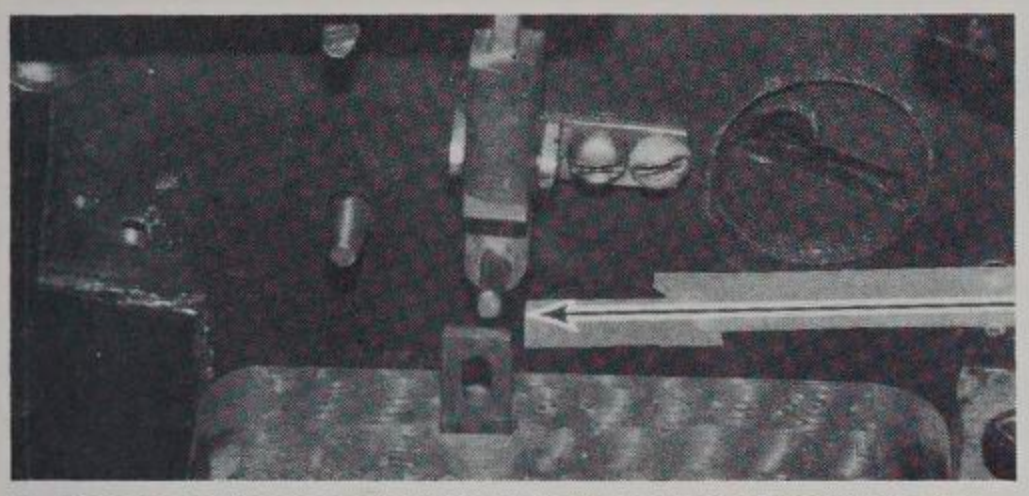
Photograph six shows the inside of the door with the door rotated to the locked position.



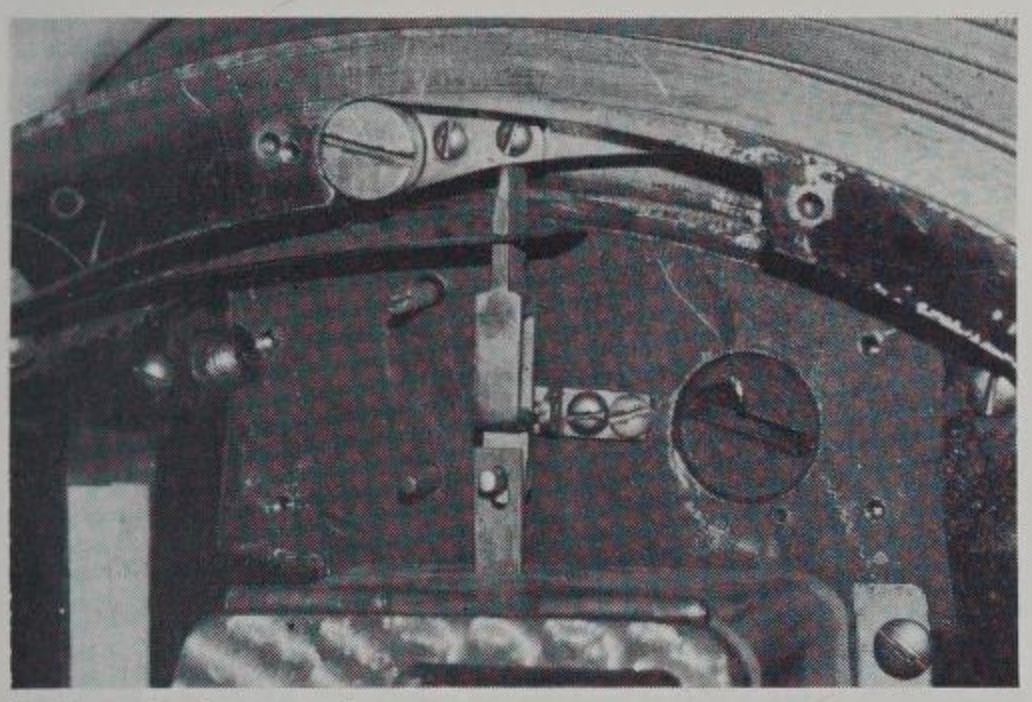
6. Inside of the Mosler door.

Removing the cover plate above the gorgeous three-movement Yale timelock exposed the source of the malfunction. The timelock mounting screws had come loose, allowing the timelock to tilt forward, disconnecting itself from the locking bolt control arm. The disconnect is shown by the arrow in photograph seven.

In photograph eight the timelock mounting screws have been tightened, the little pin on the control arm has found the hole on the timelock linkage arm, and everything is hunky-dorey once again. Notice the leaf springs attached to



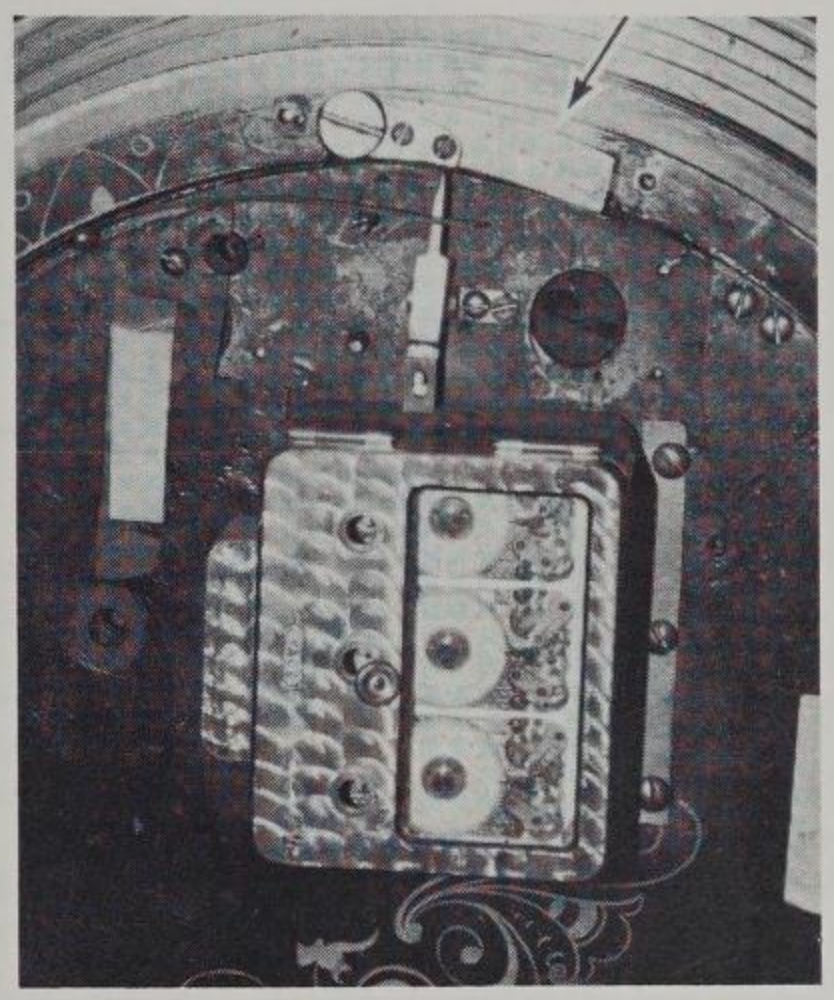
7. Timelock disconnected from the locking bolt control arm.



8. Repaired connection.

the control arm. This keeps constant outward pressure on the locking bolt.

In case any of the preceding is confusing, photograph nine should put everything in perspective. The arrow is pointing



9. Arrow indicates locking bolt in unlocked position.

to the locking bolt, which is in the unlocked position.

After filling the holes with a couple of Lockmasters' Schwayder pins, Pat and I retired to a nearby restaurant for dinner. We talked shop over a couple of filet mignons, and continued the discussion well past dessert.

On the three hour drive home I got to thinking how dedicated (obsessed?) so many of use are with safes. I wonder how many plumbers or electricians live, eat and breath their craft? Well, my friend Pat Fahey and I sure can't get enough of ours. ■

I love beautiful antique safes, and this one was a beauty. And fun to open. I was amazed, though, at how easy it was to drill. The only reason we used the Magnum was to guarantee a nice, straight hole.

The Olympus Lockscope

"Olympus has introduced a new scope designed specifically for the locksmith...the Lockscope. And best of all, it costs less than a good key machine."

by Dave McOmie

George Stockley, demonstrating some of the world's best borescopes, is becoming a familiar sight at our conventions, and Olympus is on it's way to becoming a household name in our industry. And even if the moniker doesn't inspire you with the same reverence it does me, I guarantee the product will.

Up to now, high-quality optical equipment has always been accompanied by a high price-tag, rendering it inaccessible to all but a few specialists. Well my friends, this long-existing situation is changing in our favor. Olympus has introduced a new scope designed specifically for the locksmith, which they have appropriately named "The Lockscope." And best of all, it costs less than a good key machine.

The Lockscope is going to be the subject of our scrutiny this month, along with the round door money safe that I opened with it. Are you ready? Let's crack a safe!

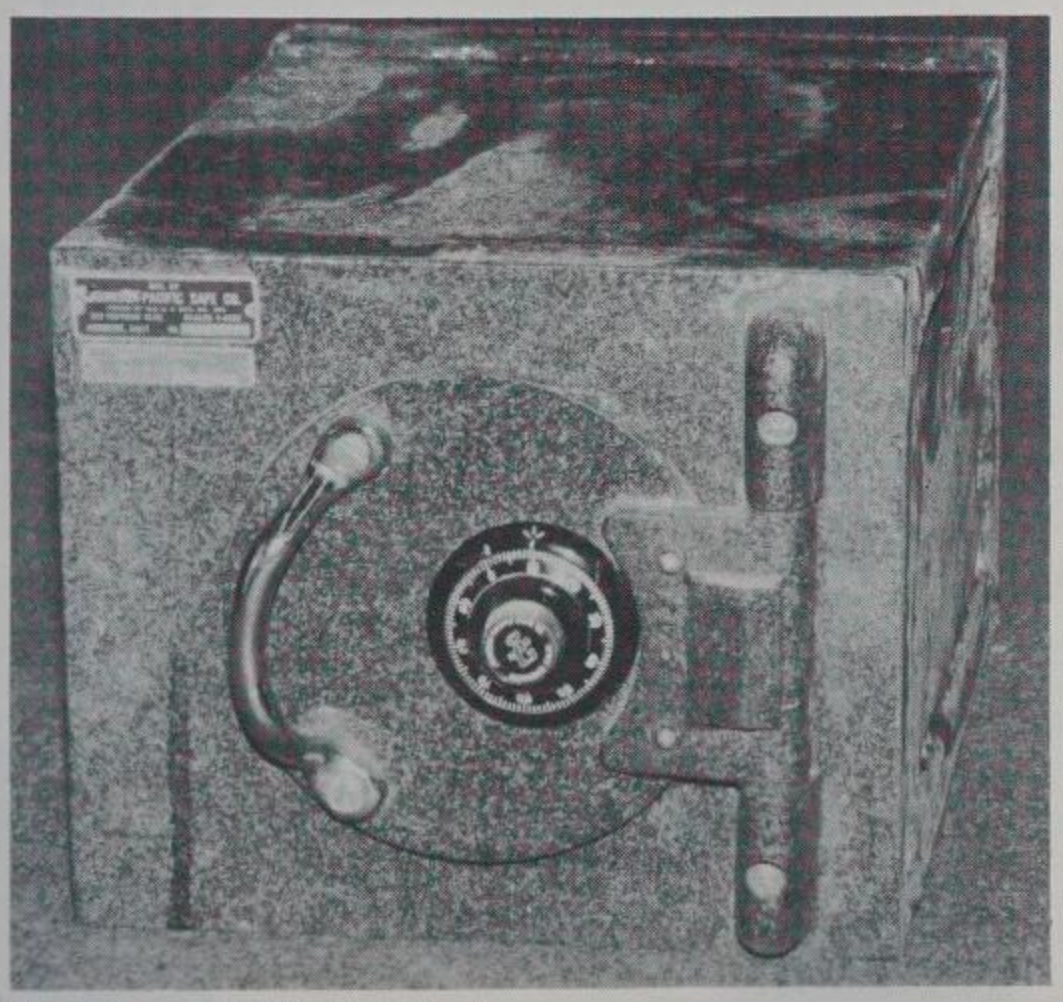
Shortly after receiving my Lockscope, I received a call from my good friend Neal McMahon, to open the Johnson-Pacific TL-15 shown in photograph one. The TL-15 is easily distinguished from the C-rate door by it's heavy duty handle. When you put a drill to one you will also find it thicker and more difficult to put a hole in.

Neal had never sighted a combination through a change key hole, and we had a golden opportunity to use this slick-trick of a technique, so that is exactly what we decided to do. In photograph two Neal is showing good form as he penetrates the top of the body with a 5/16" high-speed drill bit. (The Lockscope will fit in a ¼" hole, but we used a 5/16" hole to give us room to tilt the scope a little).

After Neal finished the hole, we hooked up the Lockscope to my Olympus ILK-4 150 watt light source. (The ILK-4 is now obsolete; it is replaced by the smaller, lighter, more compact ILK-5). In photograph three, Neal has inserted the Lockscope and its 90 degree mirror sheath into the hole, zooming in on the change-key hole.

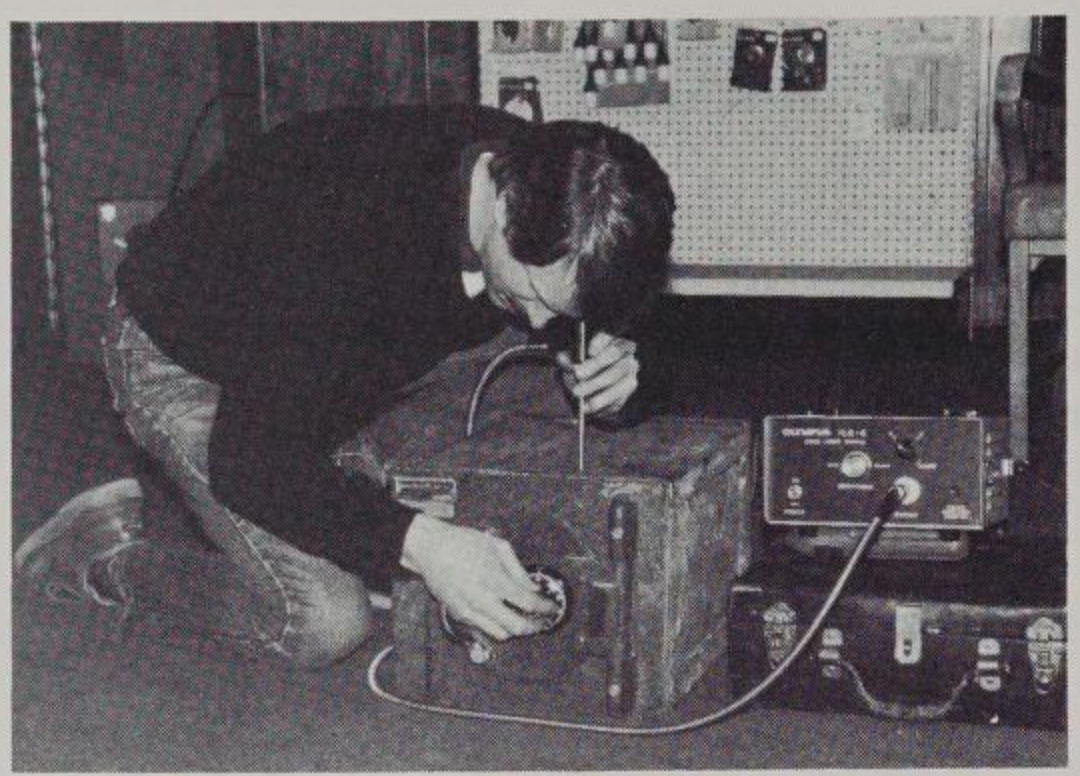
The first step in this technique is to carry the wheels around five numbers at a time, lining up the gates at the change hole, and recording the number at which each individual gate was lined up. You can save a later step if you use the changing index to record the numbers. In photograph four, Neal has lined up the gates at the change key hole and recorded the respective numbers at the changing index on the dial ring.

The second step is to add 50 to all the numbers, which will bring the change hubs of all the wheels around to the change key hole. This is shown in photograph five. At this point you can fine tune the combination, lining up the change-hubs as perfectly as possible. Remember, we are still using the changing index.

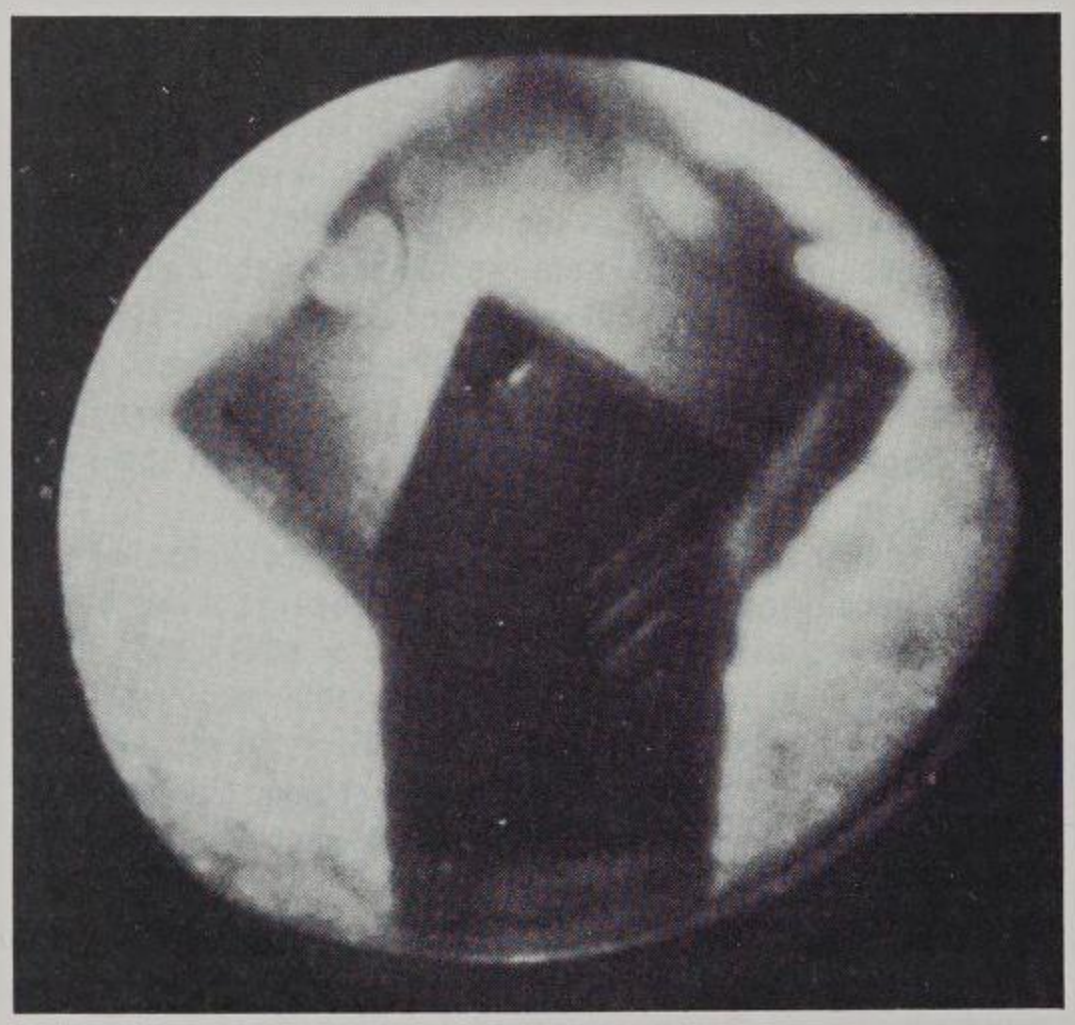


1. Johnson-Pacific TL-15 safe.

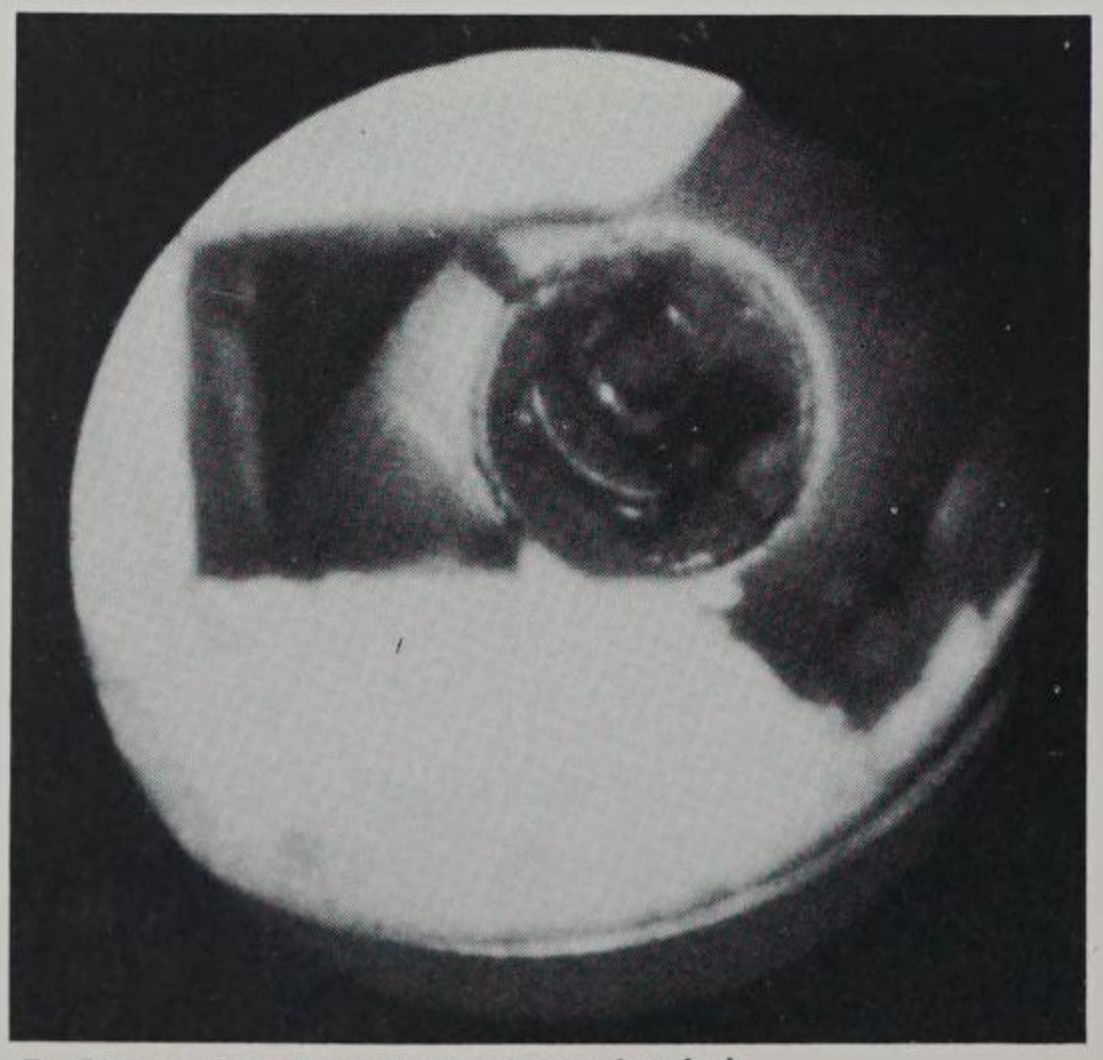
2. Drilling the top of the TL-15 body.



3. Inserting the Lockscope and mirror sheath.



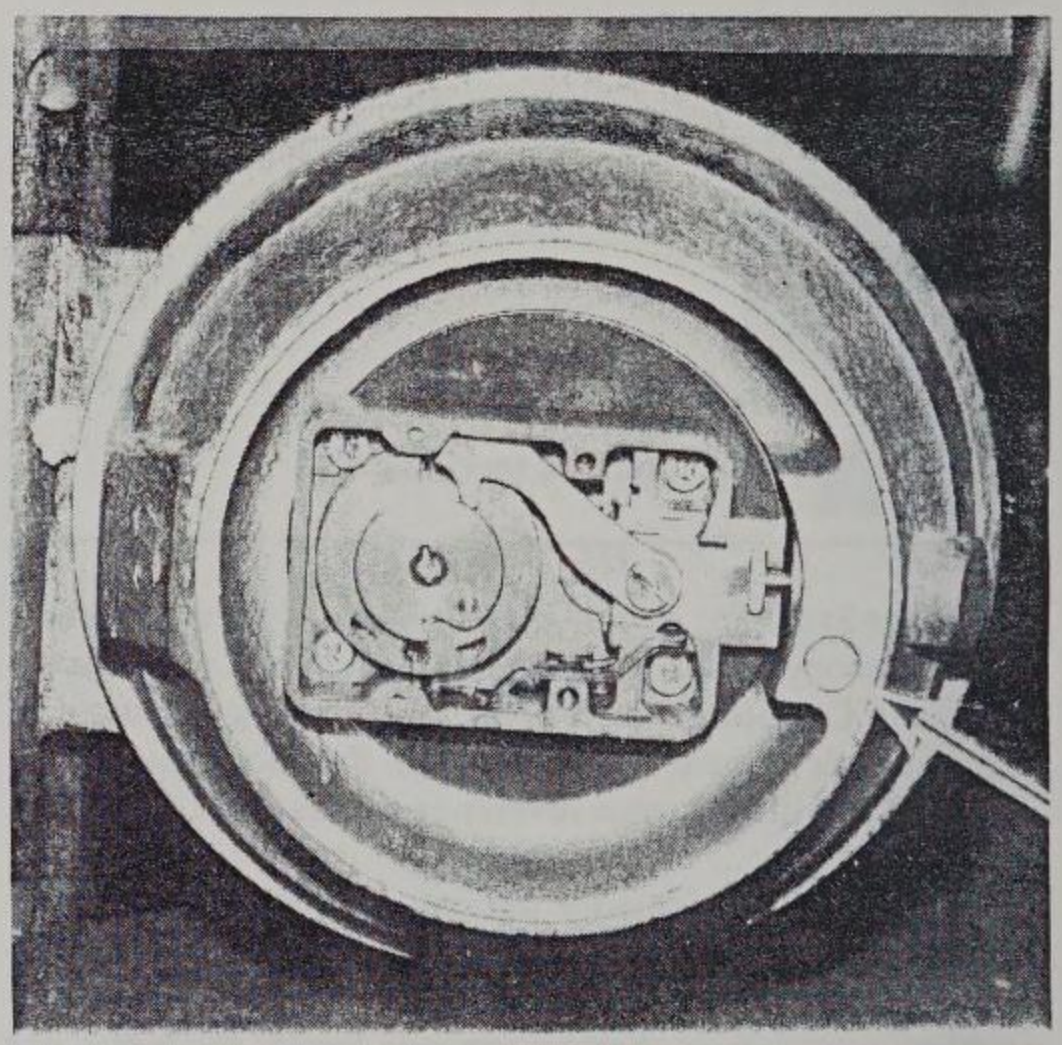
4. Gates lined-up at change key hole.



5. Change hubs brought to change key hole.

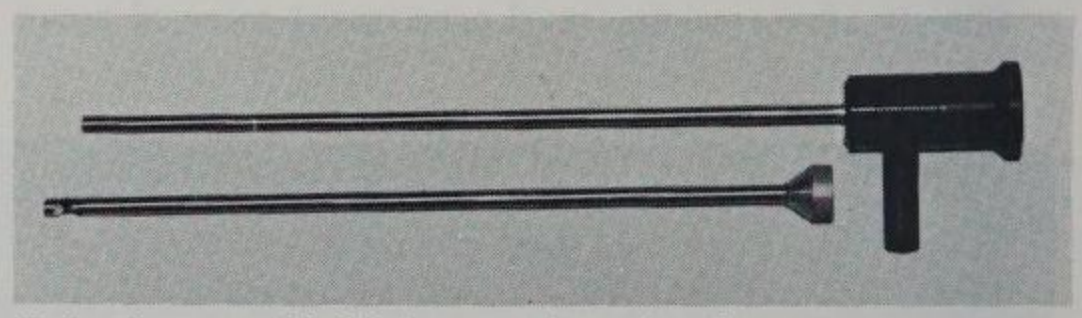
The third and final step is the easy one. Simply take the fine-tuned combination which you obtained from the changing index, and dial it at the opening index. The safe is open.

"Hot-diggety-dog," said Neal as he pulled open the door of the Johnson-Pacific. He removed the back cover and I snapped photograph six. This is a single-bolt door with the locking bolt at 9 o'clock. The Sargent & Greenleaf R6730 is mounted RH. Notice the T-slot in the lockbolt, in which the locking bolt is engaged. The arrow is pointing to the external relocking device.

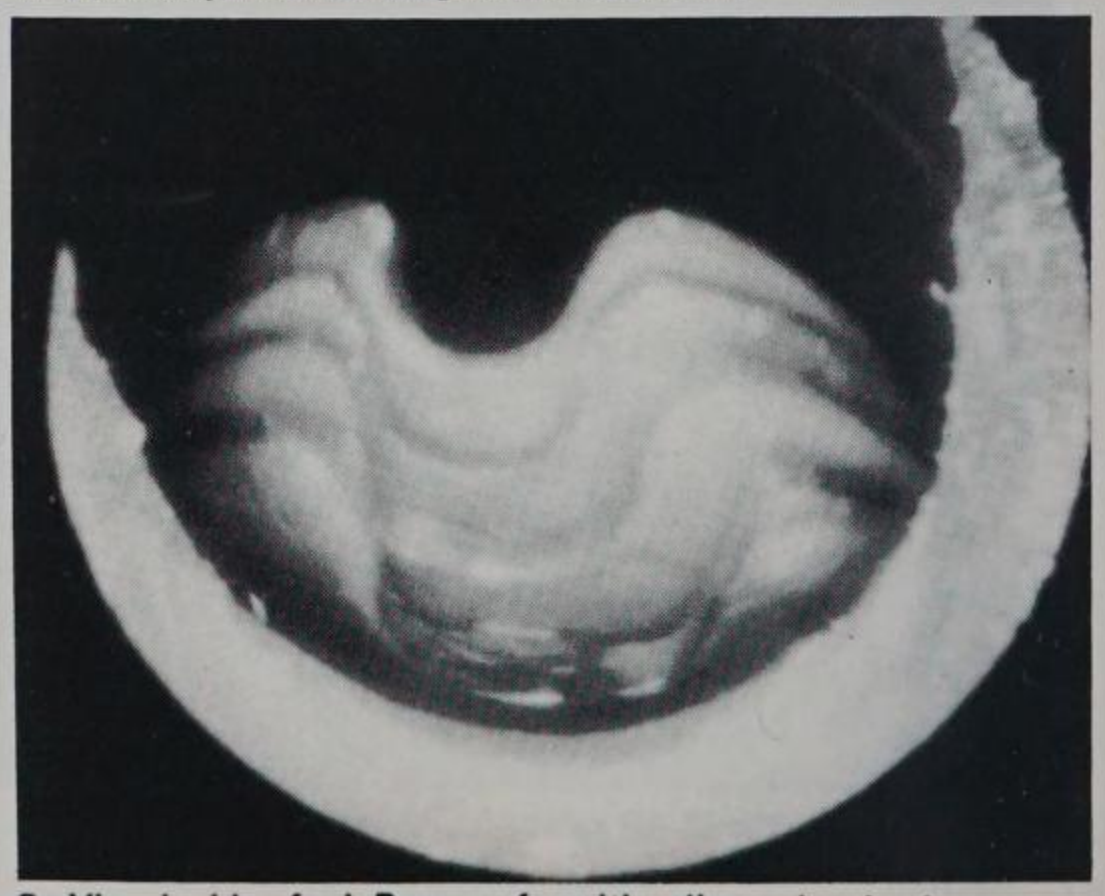


6. Safe door with back cover removed.

Well, with the safe out of the way, let's finish off with a closer look at the Lockscope. In photograph seven the Lockscope is shown with it's 90 degree mirror sheath. The overall working length of the scope, with or without the mirror sheath, is 10 inches.



7. Lockscope with 90 degree mirror sheath.



8. View inside of a J. Baum safe, with a direct view Lockscope.

Without the mirror sheath, the Lockscope looks straight ahead, with a 50 degree field of view. Believe me, this feature is handier than a camera at a nudist camp. I use my direct-view all the time. Photograph eight was taken with the straight, or direct-view Lockscope through a hole in an old J. Baum. The hole was slightly off, and the edges of the wheels could hardly be seen by the naked eye. But as you can see, with the Lockscope in the hole, all three wheels and the driver are clearly visible. There are plenty of other occasions where the direct-view Lockscope can bail your tail out when nothing is visible to your eye.

Of course, the traditional use of a borescope in our industry has been for right angle viewing. This is the express purpose of the 90 degree mirror sheath. Photograph nine was taken inside a Mosler MR302, and as you can see, the view is beautiful. With crystal clarity, all three wheels and the fence are clearly visible.

Photograph ten was also taken through the Lockscope with the mirror sheath in place. This is inside a four-wheel Peerless lock in an antique Diebold jeweler's chest. These are very thick wheels, and the hole was very close to the wheel pack, yet the Lockscope with the sheath was still able to pick up all four wheels.

It is a rare tool that wins my unqualified praise. In the early 1980s it was the Bosch Hornet. A few years later it was Strong Arm drill bits. Now it is the Olympus Lockscope, which I believe will set a new standard for quality in this industry.

9. A 90 degree mirror sheath used to view the inside of a Mosler MR 302.

10. The inside of a four-wheel Peerless lock as seen through the Lockscope with the mirror sheath.

Well, the only important thing left to talk about is the bottom line. The current components for the Lockscope are as follows: **Lockscope:** 5.9mm diameter; 10″ working length; direct view; 50 degree field of view. **Side-view mirror sheath:** 6.2mm diameter. **72″ Fiberoptic Light Guide Cable:** carries light from the Light Source to the Lockscope. ILK-5 AC powered 150W light source. All this can be purchased for under $1400.

For more information contact George Stockley at (404) 428-1678, or write to: Olympus Corporation, Attn: George Stockley, 1800 Sandy Plains Parkway, Suite 307, Marietta, GA 30066. ■

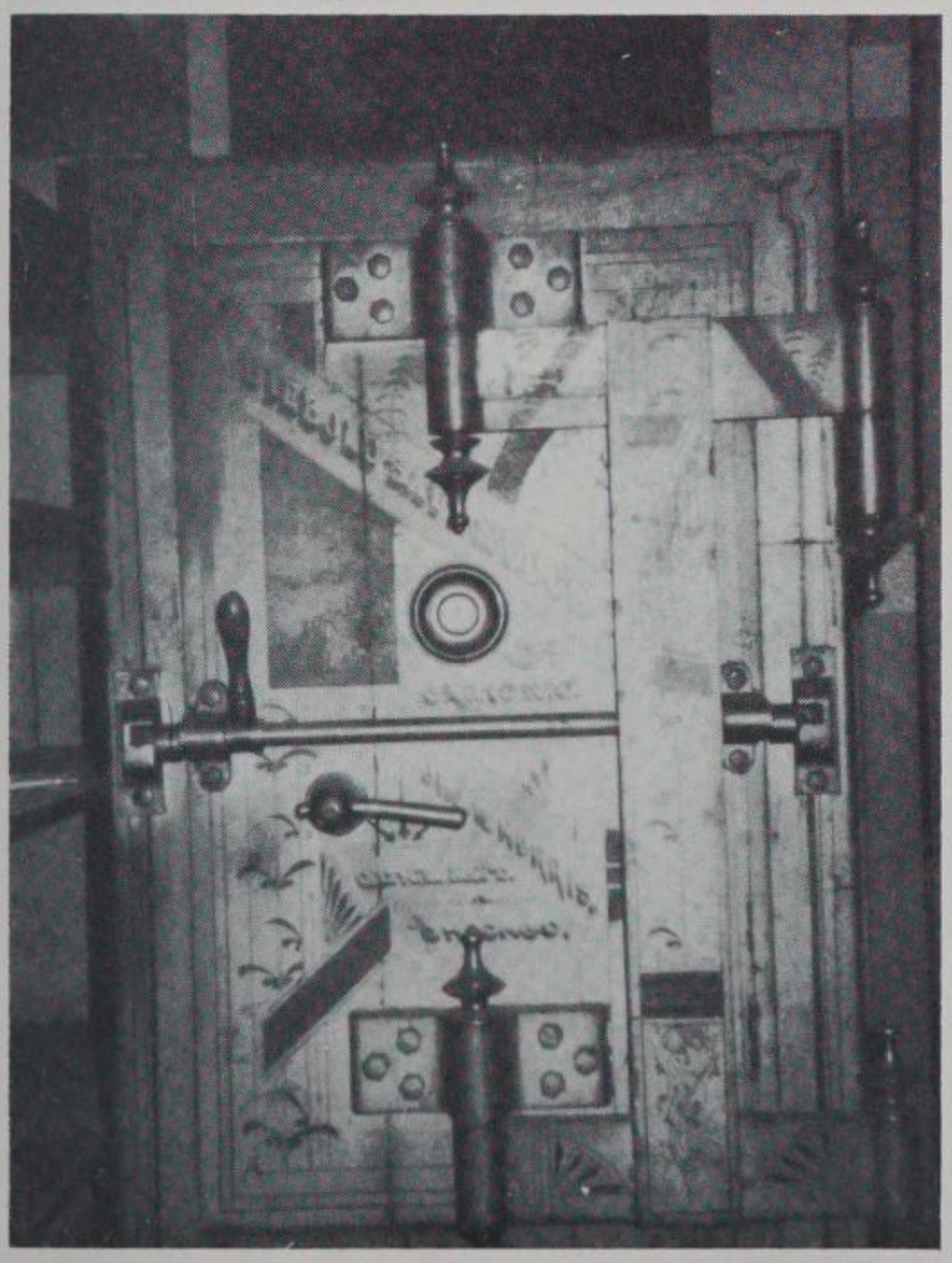
Sometimes it's all in the timing. The Olympus Lockscope was a great piece of equipment, but it was a little ahead of the industry. As a group, we weren't quite ready to spend big bucks on a scope back in 1989. If the Lockscope were re-released tomorrow, I think Olympus would do just fine with this splendid product. Oh well, hindsight and all that jazz.

Opening A Diebold Banker Safe

"This door is over four inches thick, and you can bet your britches that there is no concrete or aluminum or any barrier material in this safe."

by Dave McOmie

Occasionally an eye-opening letter crosses my desk. The most interesting of these in recent memory comes from the nuclear city of Grand Forks, North Dakota. James Peck, CML, wrote as he was in the middle of a very interesting job, opening a free-standing, comb-lock operated Diebold Banker's safe. Jim had approached the opening with the November 1986 issue of *The National Locksmith* which contains my article on Diebold jeweler's chests. In the article I take the mystery out of these long-mysterious chests by stating the two premises that lay the foundation for deducing a drill point. They are: 1) The lock is mounted somewhere along the horizontal centerline of the door; and 2) The gearing from dial center to actual wheel center is 3½". Armed with this information you can very accurately locate the position of the lock, and drill the appropriate distance out from wheel center to view the wheels with a borescope.



1. Diebold Banker's safe.

Well, this is exactly what Jim tried to do on the Diebold Banker's safe shown in photograph one. He knew something wasn't quite right when the horizontal centerline proved to be about six inches below the dial. This prevented him from using my technique of intersecting the centerline 3½" out from dial center. What to do? Like any good safeman, Jim proceeded full-speed ahead with what little information he did have, and drilled a couple of what Kareem-Abdul-Jabbar would refer to as air holes.

At this point, Jim and I had several chats over the phone. These days, it isn't often that someone is working on a safe with which I am unfamiliar, but Jim had truly exposed an achilles heel. In my entire library of photos and information, which I believe is by far the largest in existence, I could only find photos and information on one free-standing, comb-lock operated Diebold Banker's safe (as distinct from the full-automatic, which is a different horse entirely). And to complicate matters, the one in my library was direct-drive, with the wheels directly behind the dial. More on this later.

To make a long story short, Jim and I put our heads together and drew up Plan B. As is evident from photograph two, Plan B was successful—the door is open and we are viewing the lock and boltwork. Notice the lock is mounted well above the horizontal centerline.

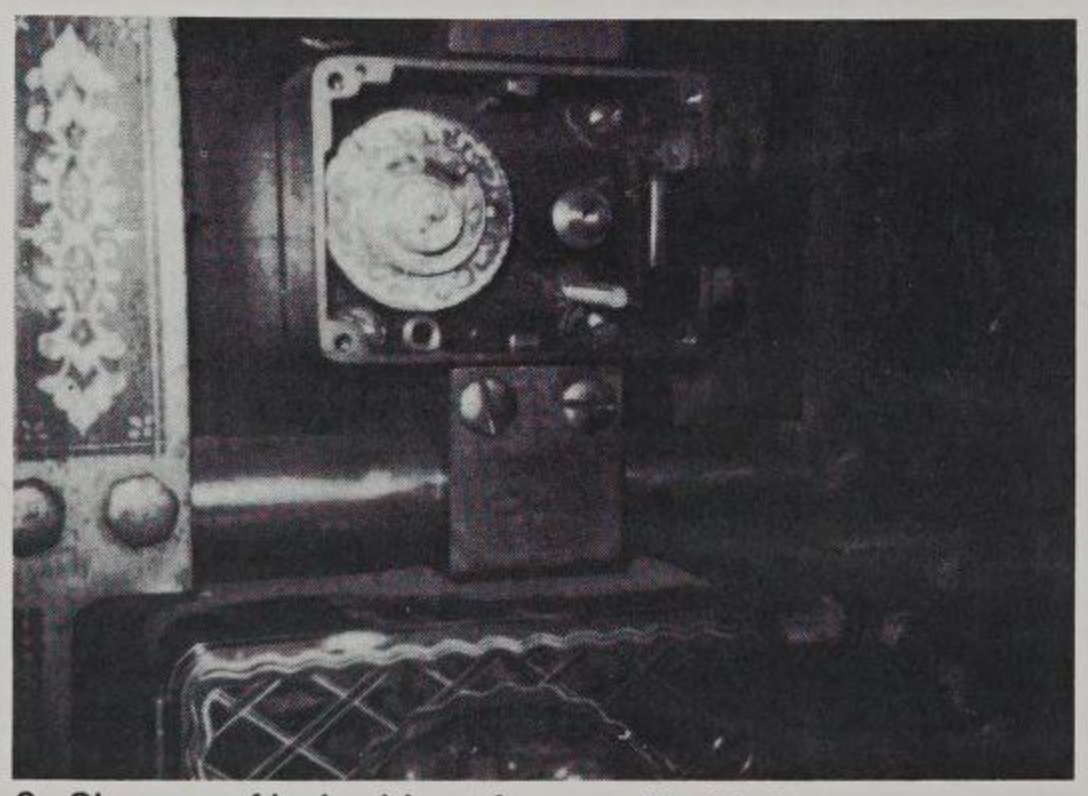
Photograph three is a close-up with the fence and lockbolt removed. Jim stuck a spindle through the hole he drilled to show where his hole came through into the lockcase. This can be seen just below the fence post.

For our mutual benefit, Jim took extensive measurements of the door, both outside and inside. The most interesting and pertinent of these concerns the relationship of the dial to actual wheel center. Yes, it appears to use the same 3½" geartrain that we are used to seeing in the jeweler's chests. However, in this Banker's safe, the gearing does not aim at the horizontal centerline; instead it points in almost the opposite direction—up toward the upper right hand corner of the door!

To refresh our memory, I have included photograph four. This is an X-ray view of the dial, geartrain, and lock arrangement in a typical jeweler's chest. Actual wheel center is below and to the right of the dial. In Jim's Banker's safe, actual wheel center is *above* and to the right of the dial.

In case the distinction between a jeweler's chest and a Banker's safe is not clear, allow me to make it now. A jeweler's chest is generally always found inside of another safe, and never has its own casters. A Banker's safe is always

2. Diebold door open, exposing lock and boltwork.

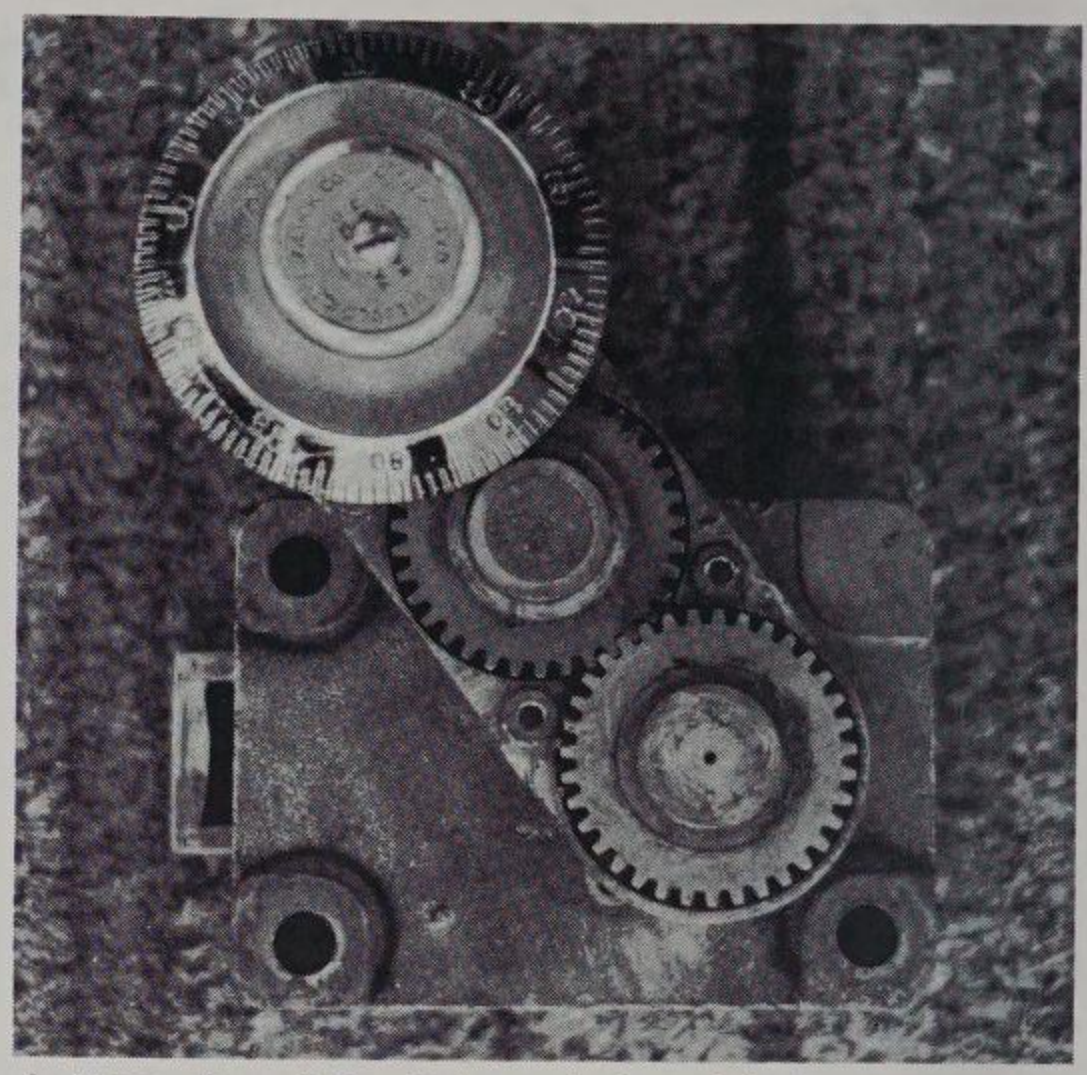


3. Close-up of lock without fence and lockbolt.

free-standing and almost always has its own casters. Once in a while a jeweler's chest can be encountered that is not mounted inside another safe. Use the casters, or rather, the lack of them, to make proper identification.

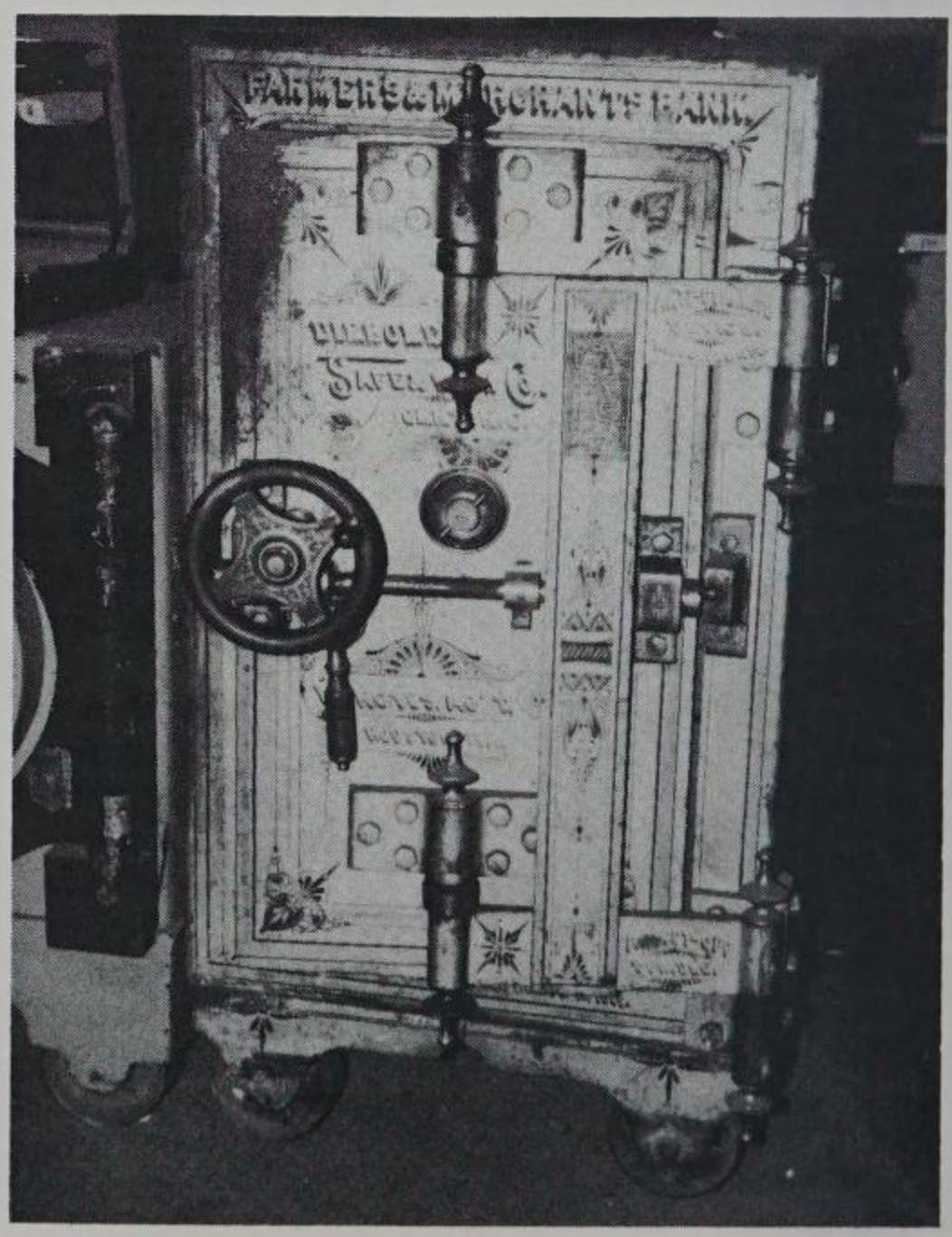
Since I went through this interesting opening with Jim, I have been on the lookout for free-standing, comb-lock operated Diebold Banker's safes. The rest of this article will be devoted to examining my admittedly inconclusive findings. Before we continue, I would like to make an appeal to the readers: Any of you with photographs or information on these rare safes, please share them with us. You can send anything you might have to me in care of this magazine. Any one responding to this appeal will be treated to 3 for 1 reciprocity from yours truly.

Recent months have found me several times on jobs in The Lonestar State. Time permitting, I usually try to visit local safe companies before flying home. During a recent trip I dropped in to see Charles Dozier at The Security

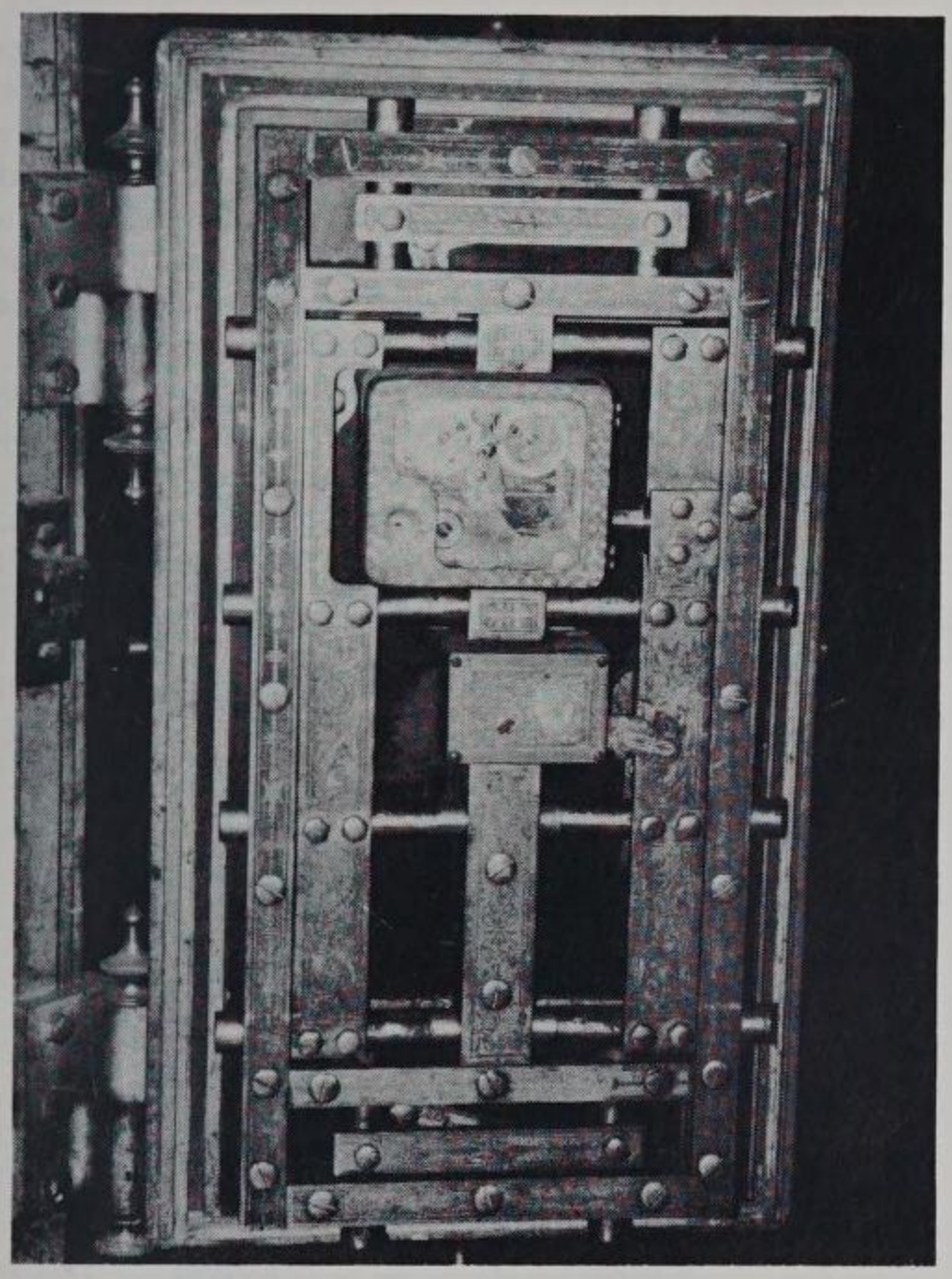


4. X-ray view of the dial, geartrain and lock arrangement, typical of this lock.

Center in Dallas. As we walked through his warehouse, I spotted the Diebold shown in photograph five. What a gem! The original paint and artwork is still in good condition; the golds and reds and blues and greens look great and are testament to a time long gone, when pride in work was normative, not eccentric behavior.



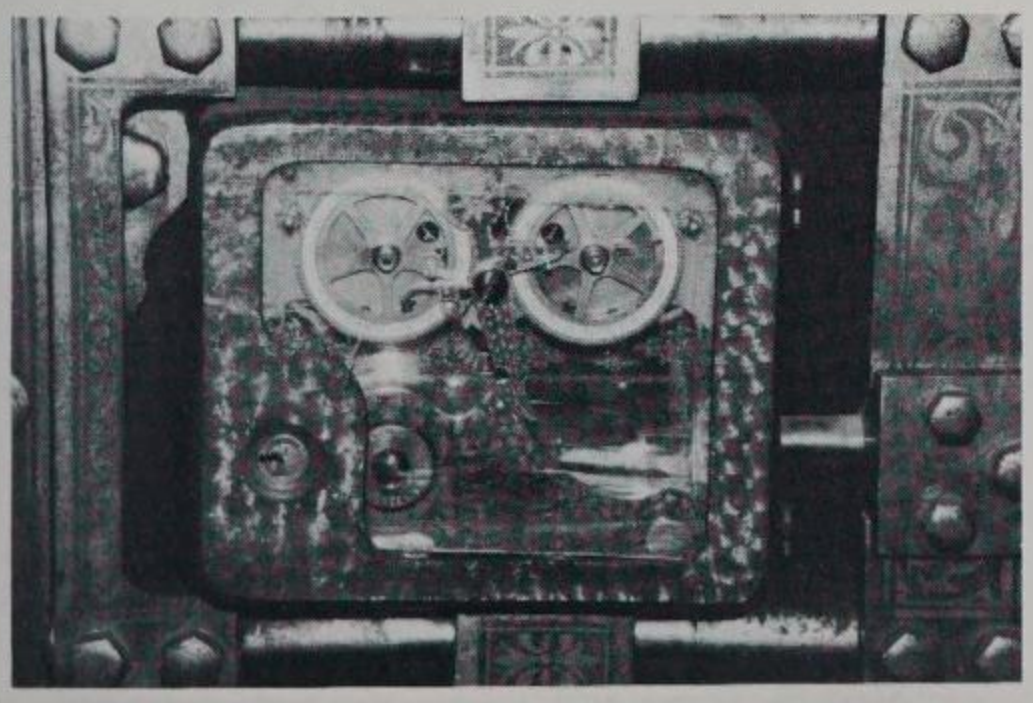
5. Old Diebold with original painted artwork.



6. Lock and boltwork of the antique Diebold.

Photograph six shows the inside lock and boltwork arrangement. Observe the 4-way boltwork. This door is over four inches thick, and you can bet your britches that there is no concrete or aluminum or any other so-called "barrier material" anywhere in this safe. Install a glass plate and a couple of "random relockers" and in my view this 100 year old safe would make the modern day TRTL-30X6 look like a Tonka toy.

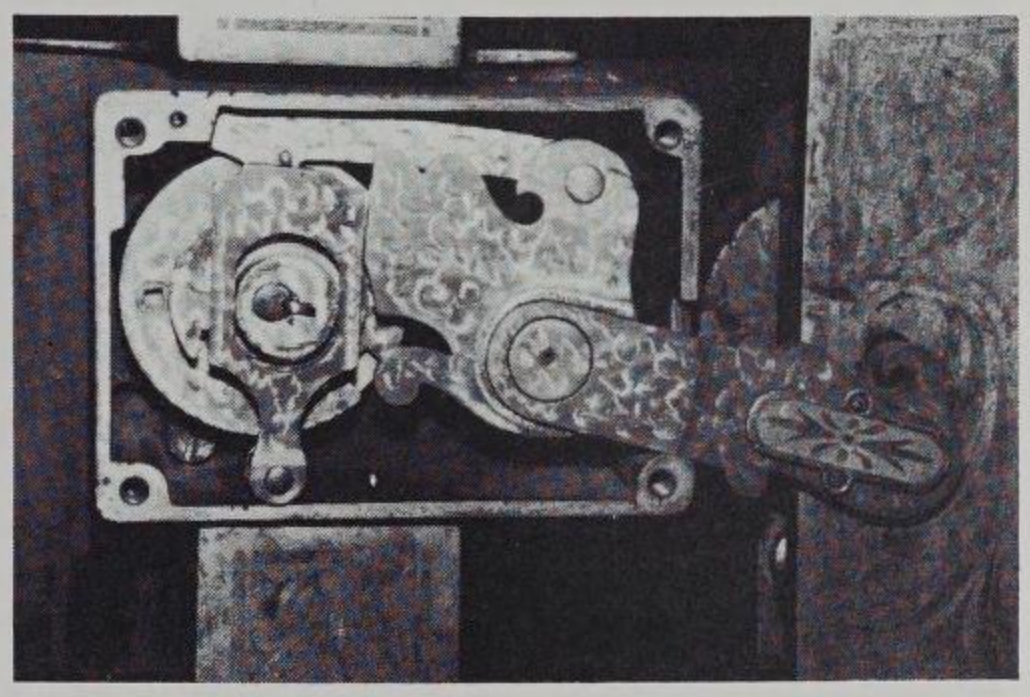
Notice the combination lock is mounted very close to the horizontal centerline of the door. As a matter of fact, my carpenter's square says it is within ⅛" of exact center. This tells us that this particular Diebold Banker's safe does follow McOmie's rule for jeweler's safes; namely, that the lock lies somewhere along the horizontal centerline. For your information, the 3½" geartrain on this door is pointing very nearly straight down.



7. The two-movement Sargent & Greenleaf timelock.

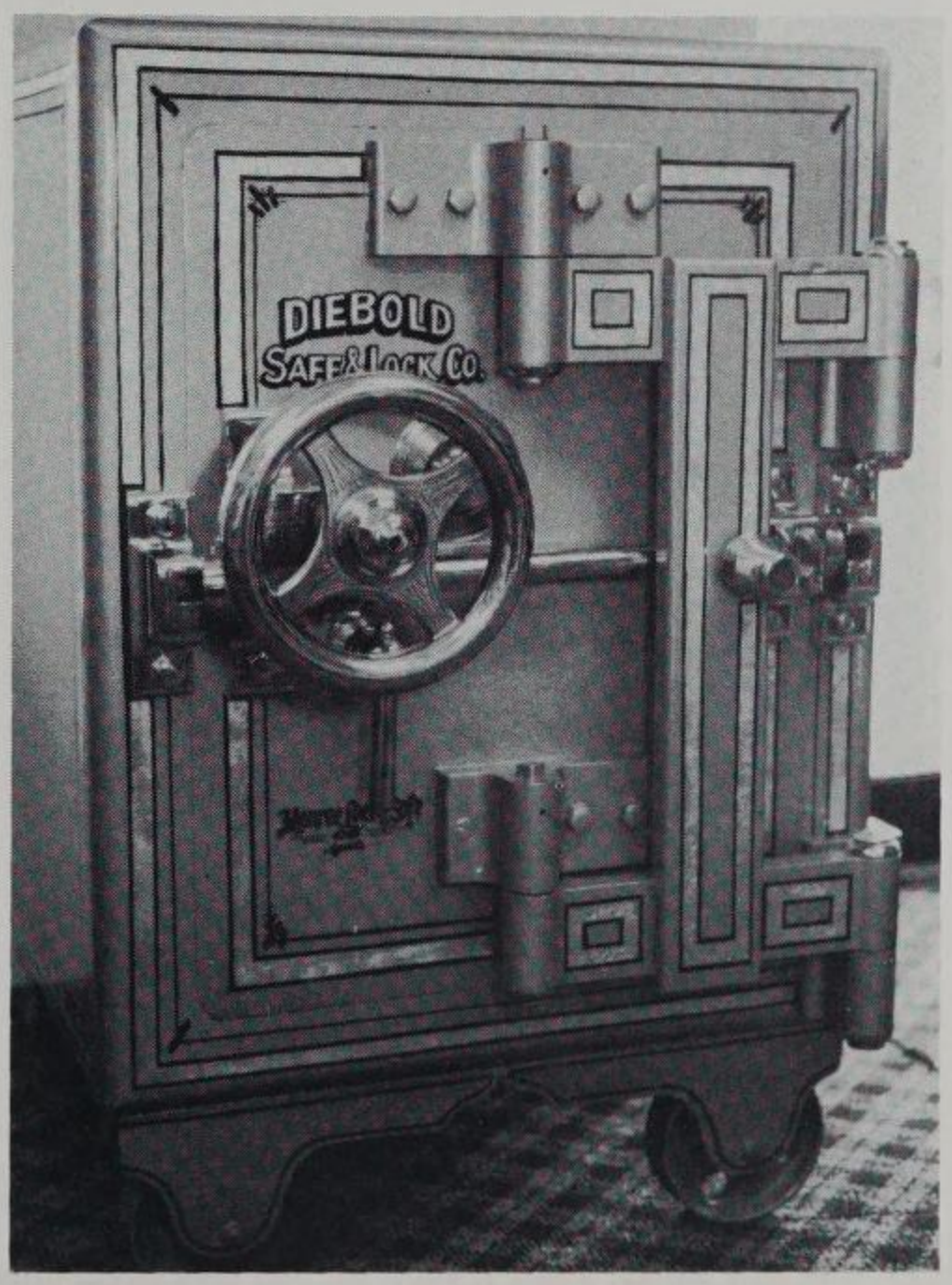
Photograph seven is a close-up of the two-movement Sargent & Greenleaf timelock. I am no timelock wizard, therefore I cannot comment authoritatively on the rareness of this specimen, but I can say that it is the only one of its kind that I have ever layed my eyes on, and it is a beauty.

Photograph eight is a close-up of the four wheel Peerless lock with its patented anti-dynamite device attached to the lockbolt. To those of you interested in the history behind this legendary invention I will simply refer you to my November 1986 article in *The National Lockmith*. It is a fascinating story.

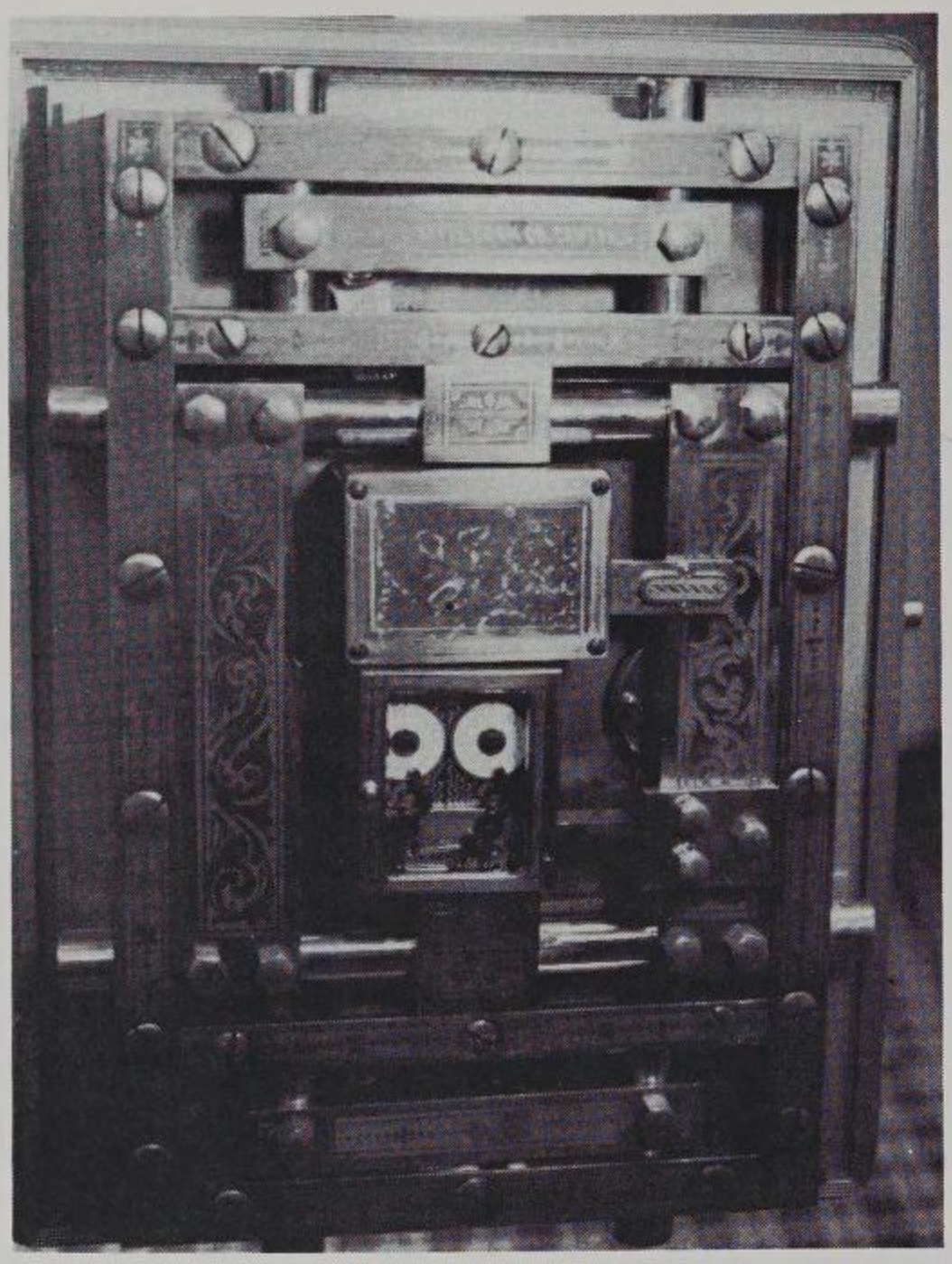


8. Close-up of the four wheel Peerless lock.

On my most recent trip to the home of John Tower and Jim Wright, I met a young man with whom I had been corresponding by mail. Mike Oehlert is a very competent safeman with a world-class sense of humor. As part of our last "goodie exchange" I received the following two photo-



9. A small combination lock operated Diebold Banker's safe.



10. Inside the Diebold Banker's safe.

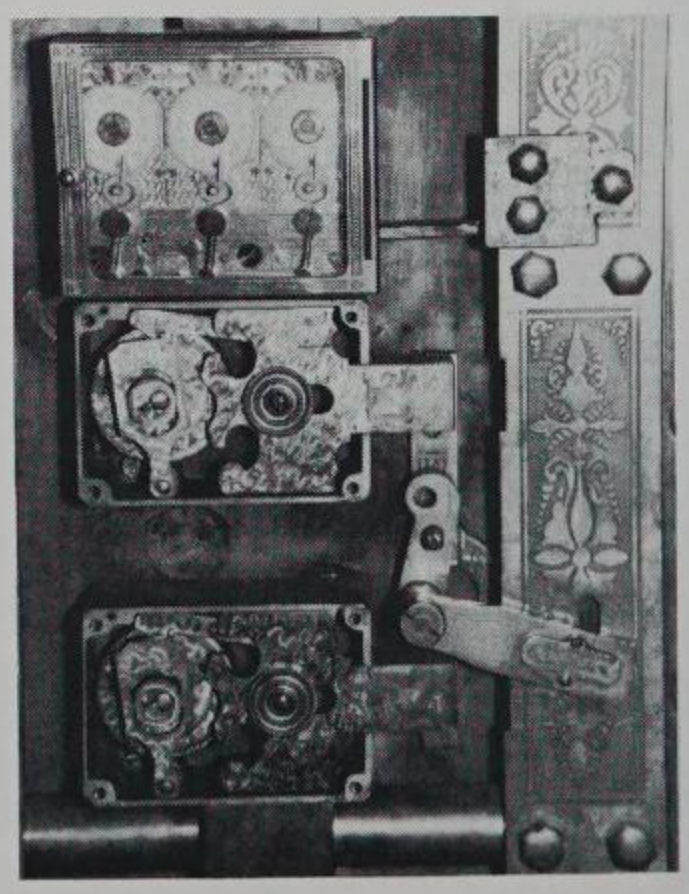
11. The only Banker's safe (I know of) that uses direct drive locks.

graphs. Photograph nine is of a small, comb-lock operated Diebold Banker's safe. Mike reconditioned this one, and as you can see, he did a great job. Photograph 10 shows us the inside lock and boltwork arrangement. As you can see, this Banker's safe does not follow McOmie's rule; the combination lock is mounted well above the horizontal centerline. A carpenter's square tells us the geartrain is pointing almost due right, toward the hinge side of the door.

In photograph 11 we have the Banker's safe I mentioned early in the article. This is the only one I am aware of that uses direct-drive locks. There is no geartrain.

Photograph 12 shows the inside of a truly pristine door. As with all the previously discussed Banker's safes, the door is very thick and is equipped with four-way boltwork.

12. Inside a Banker's safe door which is in excellent condition, with four-way boltwork.



13. Close-up of the dual combination locks and three movement timelock.

Photograph 13 is a close-up of the dual combination locks and three movement timelock. Notice the vault style linkage attached to the lockbolts. As I said earlier, these are direct-drive locks. Can this be determined from the outside? Not by physical characteristics; but the dials have a different feel and sound to them than the geared ones do. With a listening device the difference becomes as obvious as that between a 6730 and an OC5.

In conclusion I must confess to you that I have no conclusion. McOmie's rule works like a charm on Diebold jeweler's chests, but it is almost not worth trying on a Banker's safe. After determining there is a geartrain, the $64,000 questions becomes, which way is the darn thing pointing? In the absence of luck, an exploratory hole seems inevitable. And in this eventually, a flexible fiberscope is worth its weight in gold, and no, mine is not for sale! ■

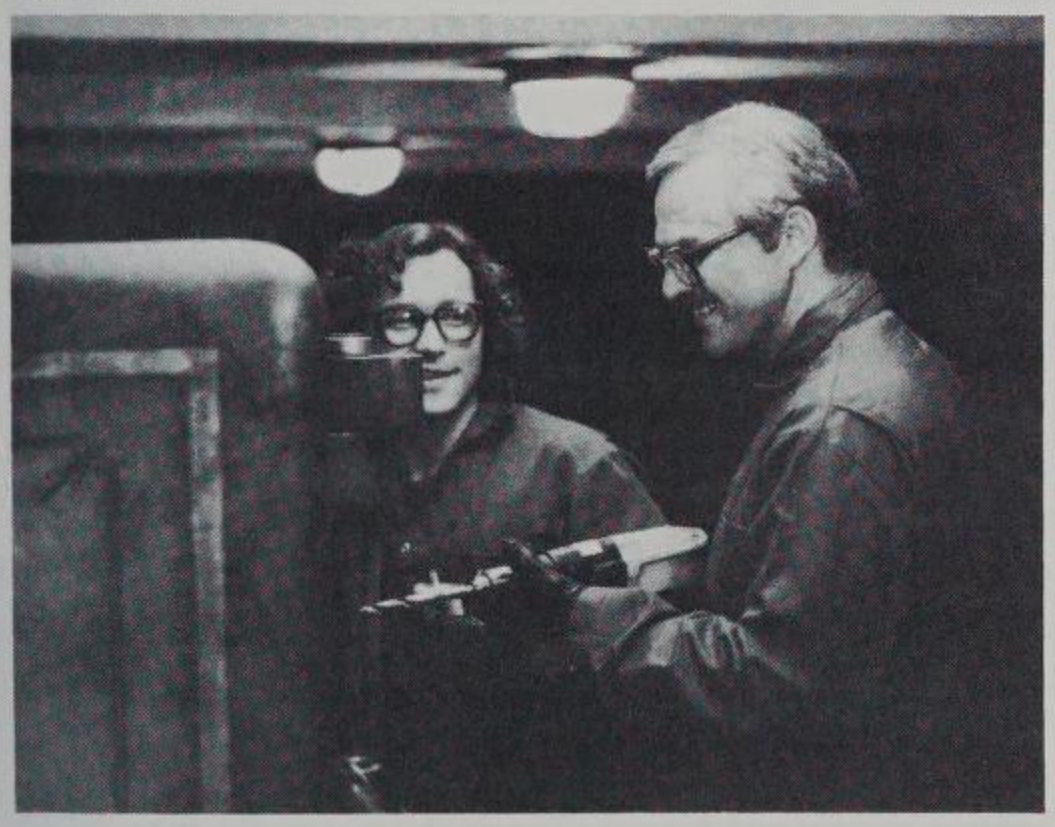
I still have not come up with a method for determining which way the geartrain is pointing. If I ever do, you will be the first to know.

Burt Reynolds...Safecracker!

"The theme of 'Breaking In' revolves around an aging safecracker (Burt Reynolds) teaching his young apprentice. They drill safes and they blow safes."

by Dave McOmie

Once in a great while something really fun and different comes along. Running around the country opening safes is something I do enjoy, but even that can get monotonous. Recently, some friends over at my old alma mater, Allied/Gary, referred me to some folks involved in the movie business. As a teaser, take a look at photographs one and two. Do you recognize Burt Reynolds? To say the least, it was a real blast...

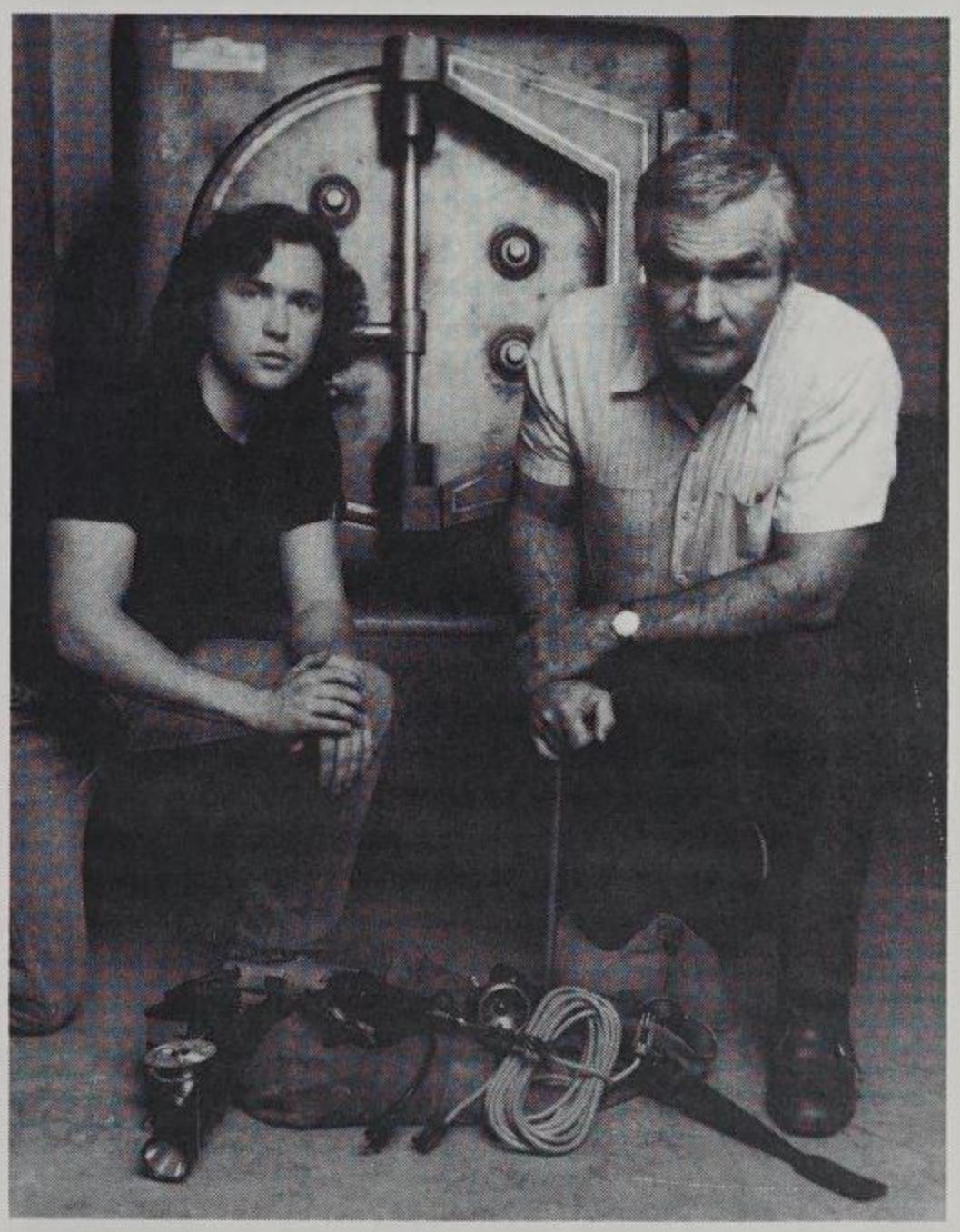


1. Burt making a drilling attempt.

Walking in the door of the Art Department put any doubts in my mind to rest. "Breaking In" was definitely for real. The Hollywooders had rented an entire office complex; there were rental trucks and people everywhere, and this was just the Art Department!

My first contact was the Art Director, John Willett, and the first thing he wanted to establish was whether I was competent to assist them—I guess not even the nice referral from Allied could override the natural skepticism people always exhibit when I walk in the door. Everyone always expects an older, more experienced looking guy, and I just don't fit the stereotype. The aphoristic line about not judging a book by its cover was, as always, right on the tip of my tongue, but as always, I bit it.

Oh well, it wasn't long before I had the opportunity to prove myself to John. He quizzed me on several things,



2. Casey Siemaszko and Burt Reynolds posed in front of their "opponent."

inquired about any material I might be able to contribute, and walked over to his library. He pulled down a book that looked a little familiar, handed it to me, and asked what I though of this "hot little item." Glancing at the cover, I couldn't help but break out in an ear to ear grin. "It's not bad," I answered, "considering the guy who wrote it is an amateur." John gave me that quizzical look reserved for those people who say the damnedest things. Then he looked down at the book, spotted the author's name, and promptly cracked up. As he reached up to put *The National Locksmith Guide to Safe Opening* back on the top shelf of the library, I knew I was in like Flint. (For those of you who are curious, he obtained the book through an unnamed source in the safe business.)

I soon found out that I was only half of the technical team. The next meeting was a show and tell for the brass. I laid out my tools, I mean *all* my tools, for their inspection. Through the door came the director, the producer, all the art people, and tagging along was Burt Reynolds, his co-star Casey Siemaszko, and an elderly gray-haired man. Burt was intrigued with the dial puller, while Casey thought the Bosch

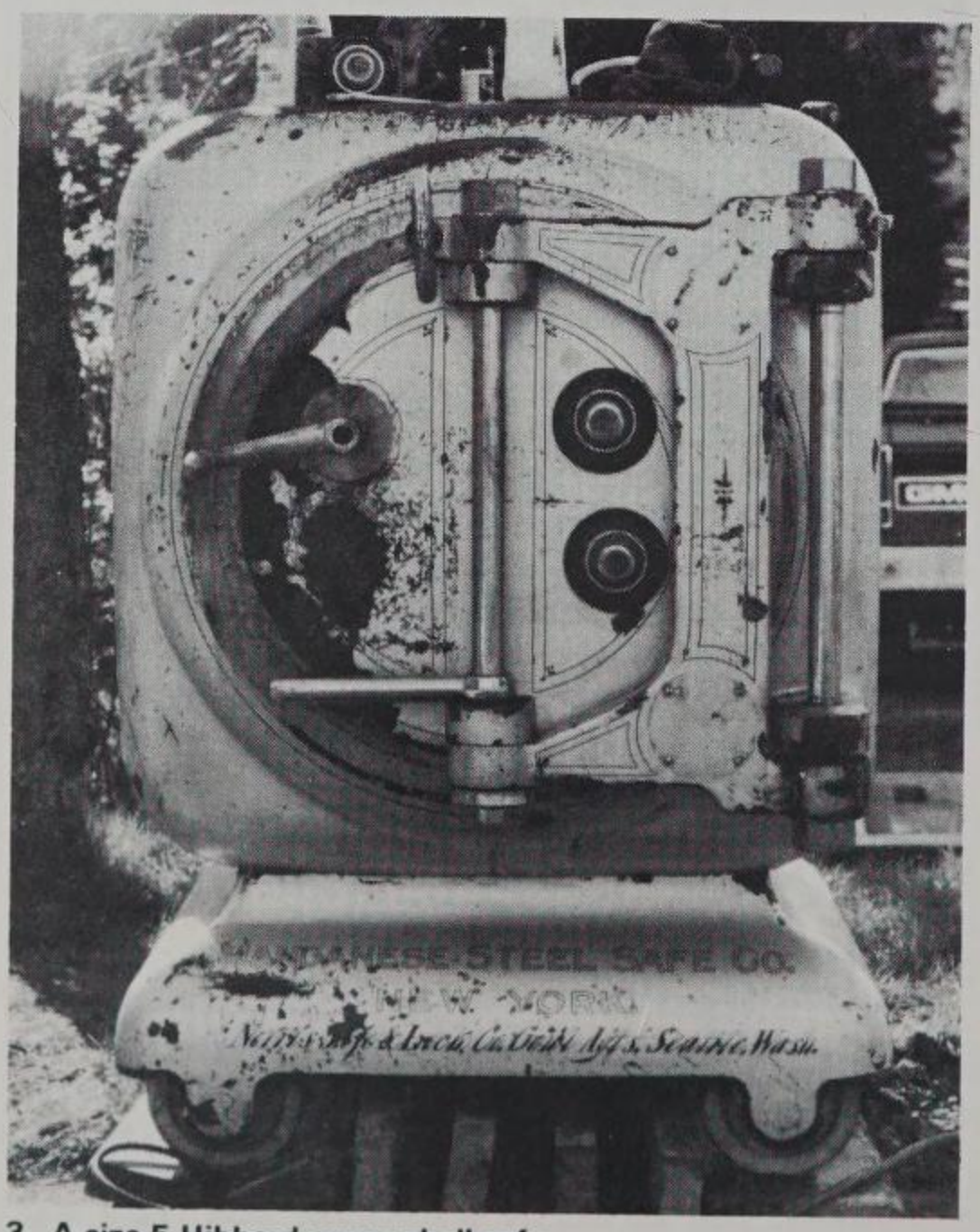
Hornet was a pretty "rad" looking drill. Everyone admired my Lee rig, Magnum 357, Broco mini-lance, and assorted scopes, but the immediate concensus was that these were unlikely items to be found in a burglar's little black bag. I was a little surprised that the elderly man seemed to have no problem figuring out how all my exotic equipment was used. Then we were introduced. Charley had done 12 years in the Oregon State Penitentiary...you guessed it, he was a safe burglar!

Although Charley was not an expert in the technical sense of the word, he was well acquainted with peeling techniques, and was indeed an expert at using explosives to open safes. His job was to give Burt an insight into the mind of a burglar, and to assist in the scenes where safes were to be blown.

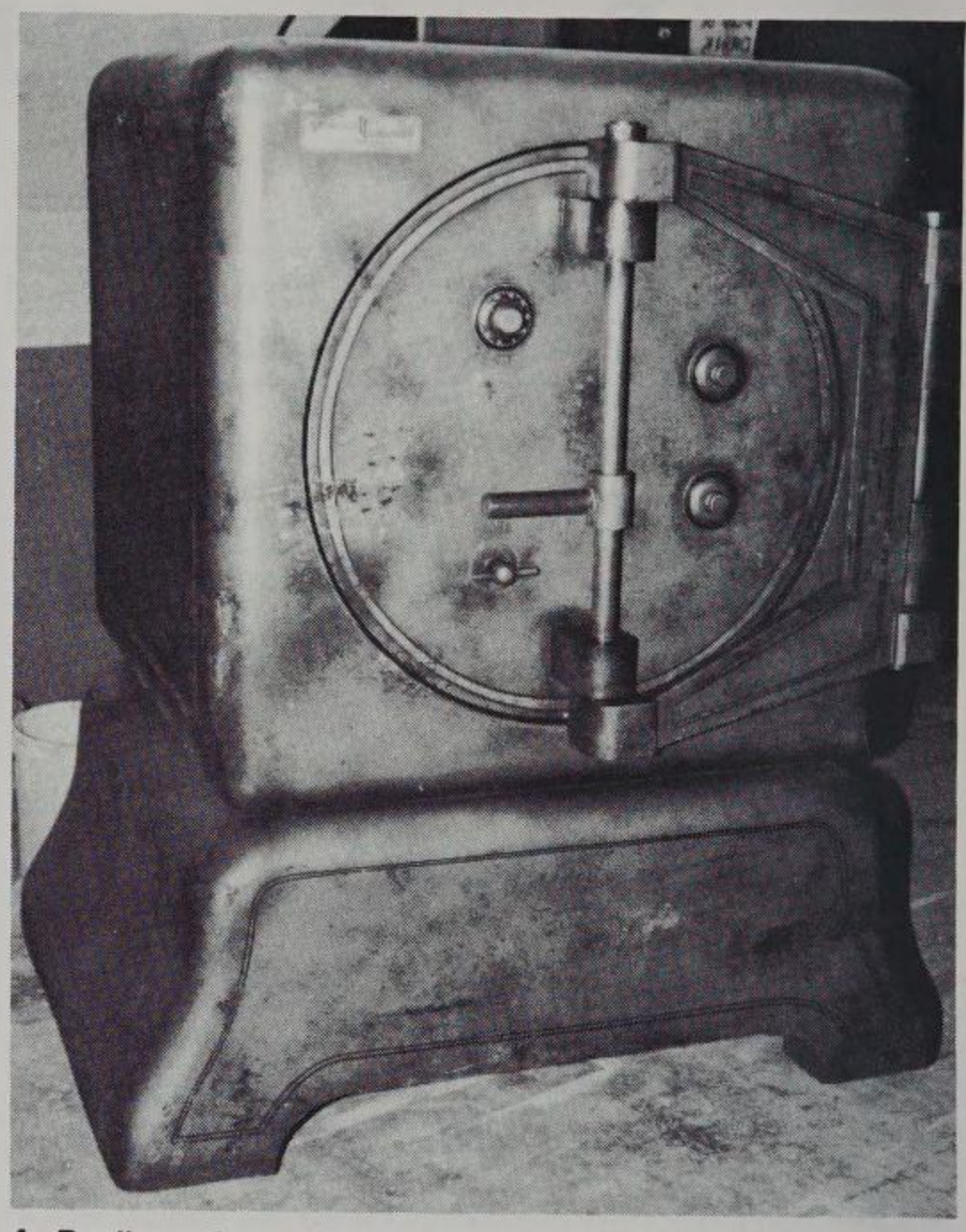
It was at this meeting that I was finally clued in on what was really happening. Without giving anything away, I can say that the theme of "Breaking In" revolves around an aging safecracker (Burt Reynolds) training his young apprentice (Casey Siemaszko). They drill safes, they blow safes, they have an occasional mishap, and the apprentice has an amazing propensity for doing the damnedest things!

One of my first assignments was to help John design a cannonball for the grand finale. Since the woodworkers were going to make the thing out of wood, John wanted to avoid a screw door if possible, as the threads on the door and body would have been extremely difficult to manufacture. The answer was obvious—to model our cannonball after one which did not use a revolving door: The infamous Hibberd-Rodman-Ely. Strictly speaking, the Hibberd is not a true cannonball due to the shape of its body, but we still refer to it as a member of the cannonball family and sometimes call it a square body cannonball.

We used photographs of a size 5 Hibberd that serves as the most unusual mailbox on the block for my good friend Don Spenard in Seattle (*see photograph 3*). John went to work on



3. A size 5 Hibberd cannonball safe.



4. Replica safe produced by woodworkers for the movie.

the drafting table and produced a scale drawing of this safe to work from.

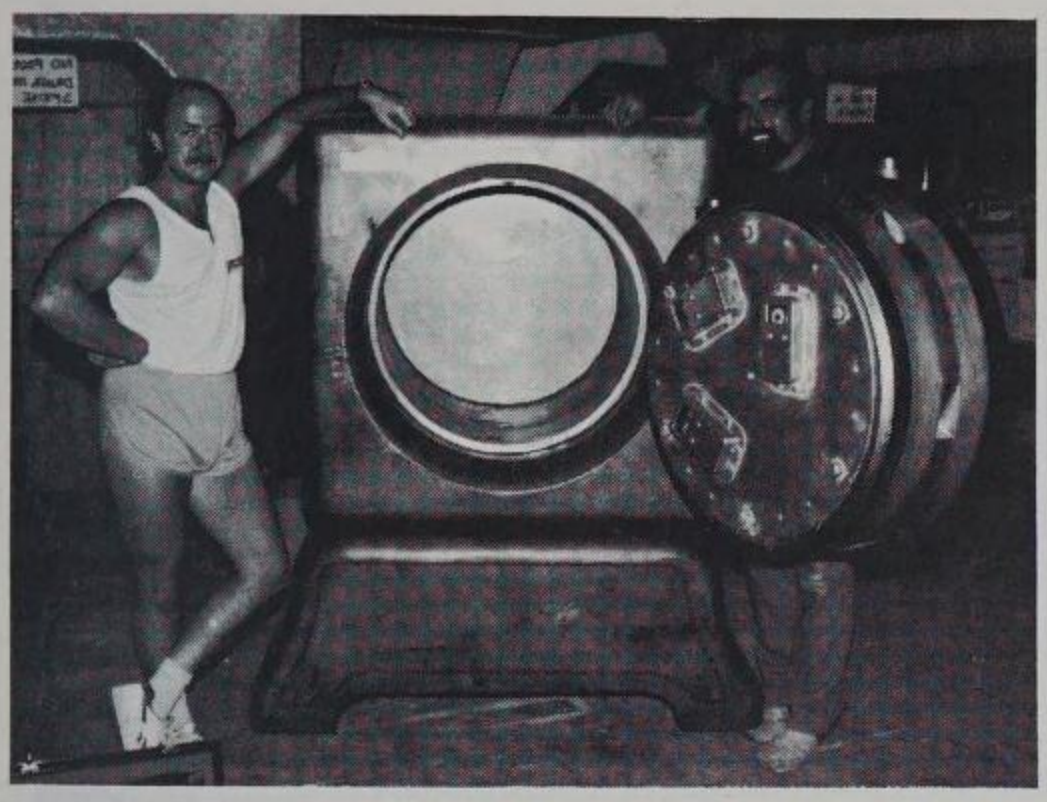
A month later the woodworkers and painters showed us the finished product, as seen in photograph four. Nearly six feet tall, it more closely resembles the size 20 Hibberd than the size 5. As you can see, it is a marvelous work of art. I was amazed at how real it looks. Even up close it looks like steel. In the movie it will be referred to as a "Double Hammer" safe, instead of a Hibberd (*see decal in photograph five*). Why? Heck, I don't know; maybe they thought the real name sounded more like a nursery rhyme.

5. Simulated label created for this safe.

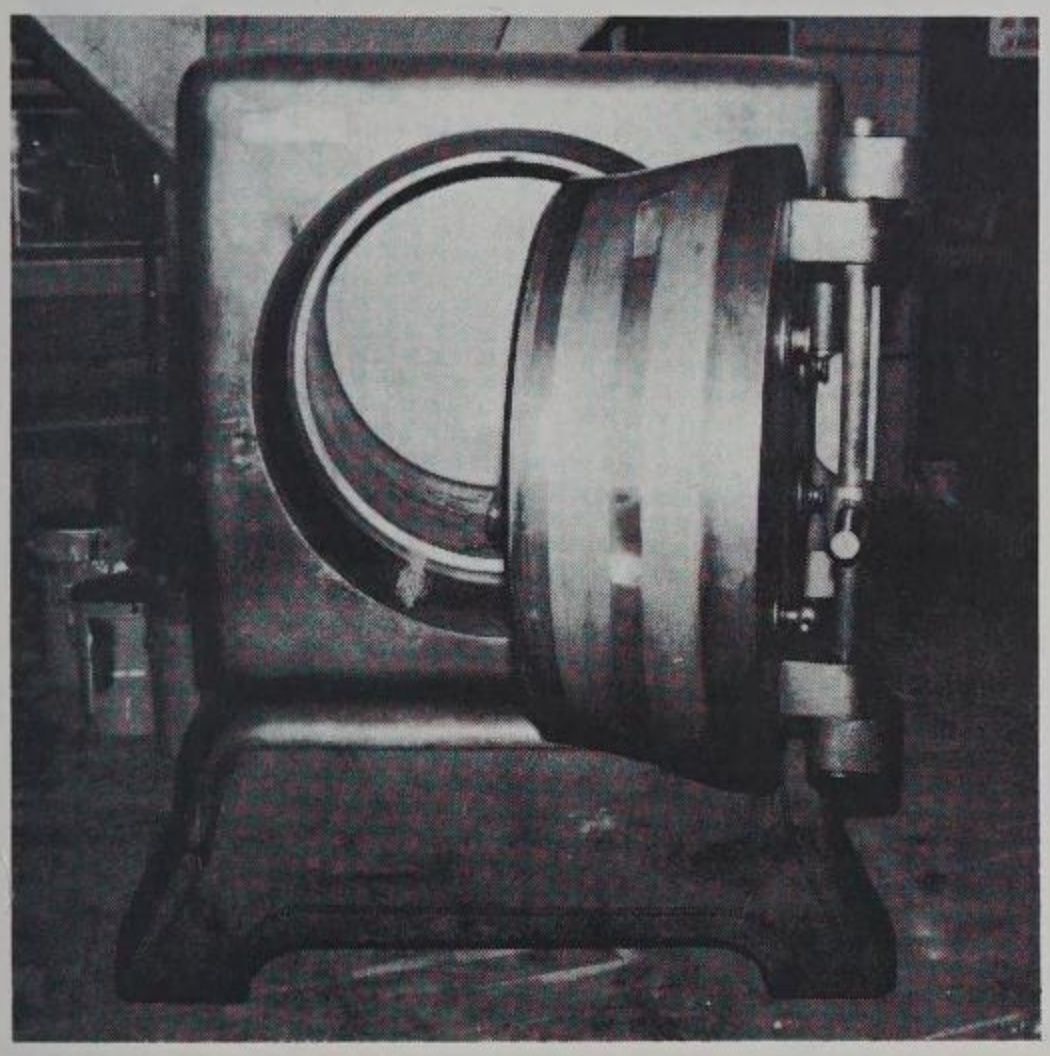
In photograph six, Art Director John Willett and Special Effects wizard Larry Fuentes pose by the Double Hammer cannonball with its door open. I think "massive" is the right word here. Notice the three timelocks on the back. Even six inches away they are quite realistic looking, even if somewhat unrealistically placed.

Photograph seven is a profile shot of the door that Burt is going to drill and nitro the holy heck out of. I'm not sure if the scene is going to be a keeper, but watch for Burt to use my dial puller on this monster—he looked like a real pro!

Just to prove to you that the Double Hammer is indeed made of wood, I had John remove the back cover so I could



6. John Willett (Art Director) and Larry Fuentes (Special Effects) posed with the massive cannonball safe.



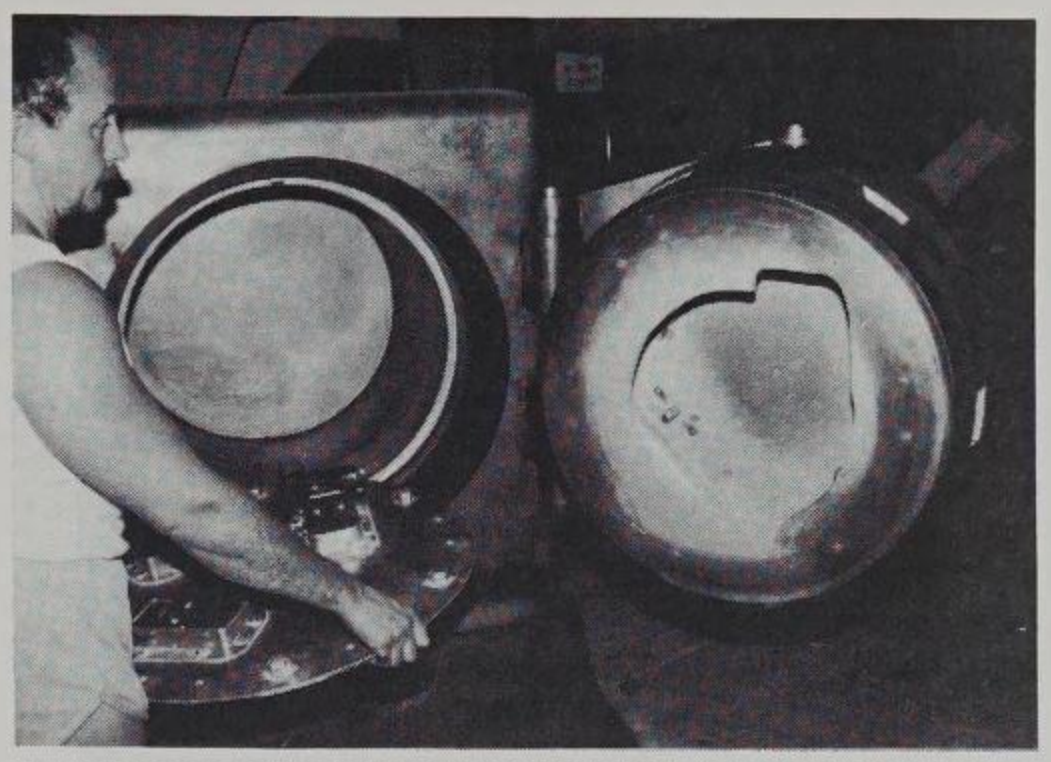
7. Profile of the safe door.

snap off photograph eight. Honest to goodness Pacific Northwest oldgrowth timber!

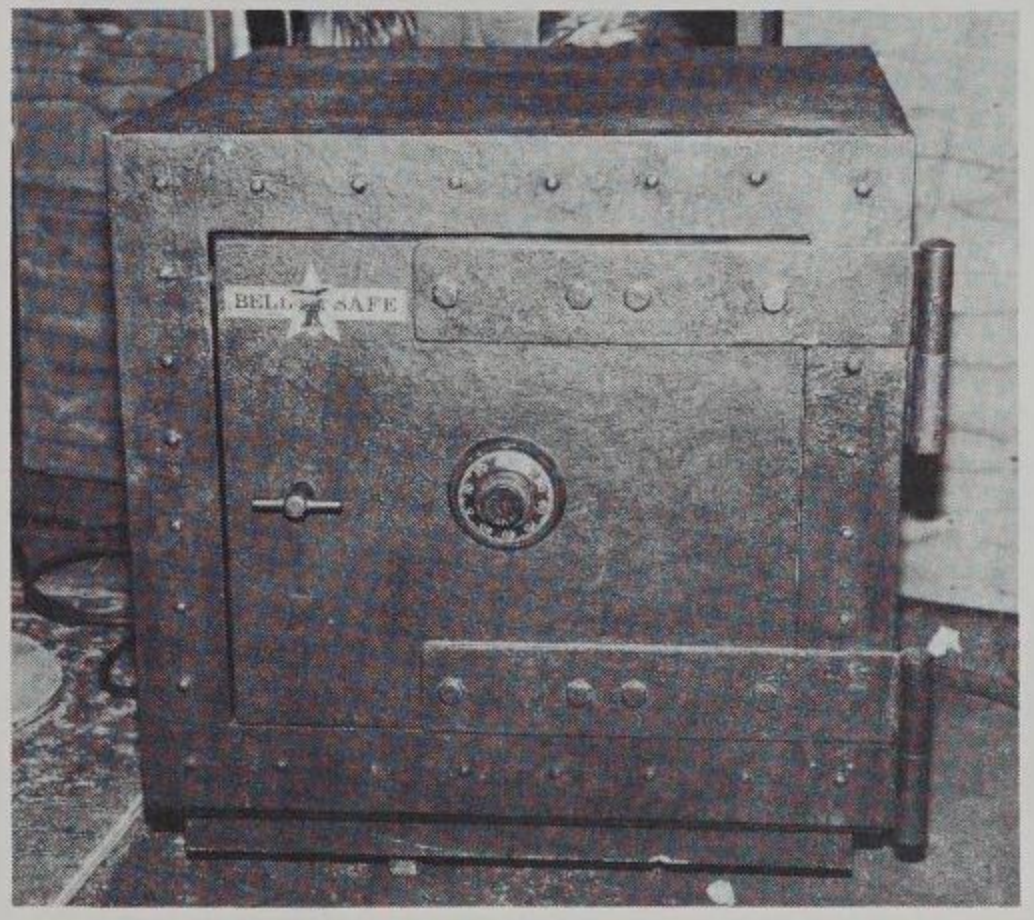
Without a doubt, the most interesting aspect of being involved in the movie was watching Larry Fuentes work up the special effects. Fake bullets, fake blood, fake bombs, you name it and Larry has it. His main assignment was to rig the explosive scenes. In other words, he had to simulate a safe being blown to smithereens with nitro-glycerin! As you might think, this required a lot of testing to get the dosages down just right to achieve realistic, yet safe results.

Photograph nine is of a "Bell" chest that stars in one of the most explosive scenes in the movie. In his practice sessions, Larry used a couple of look-alikes as guinea pigs. Guinea pig number two is shown in photograph 10. With the exception of the paint job, it is a perfect double of the one used in the actual filming.

In photograph 11 we see the magician's secret. Rather than mess with nitro, Larry used three small cannons, black



8. Back cover of safe door removed showing wood backing to safe.



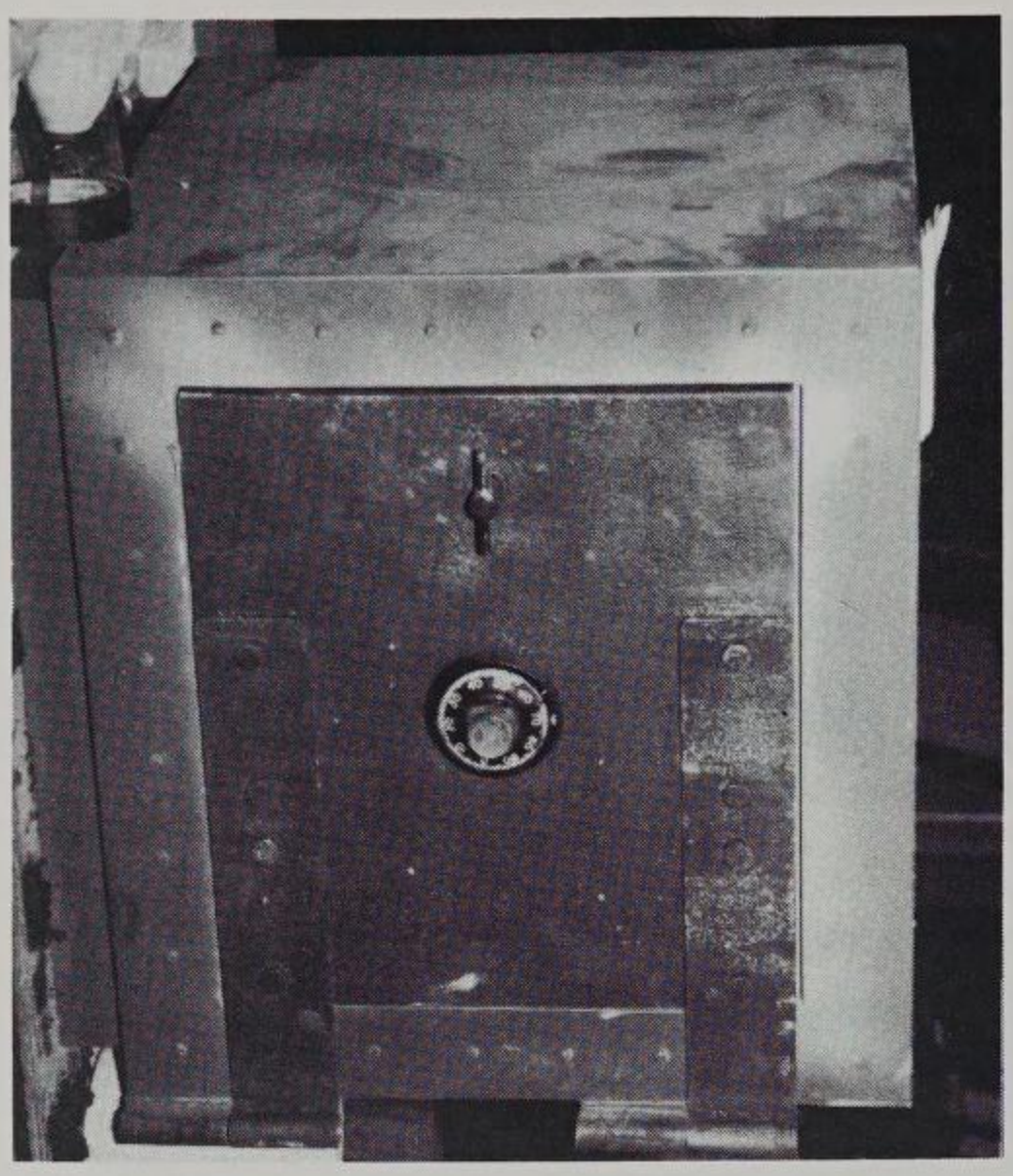
9. "Bell" chest which is destroyed in movie scene.

powder, and sand. The rearmost two cannons were loaded with a little gunpowder, some sand, and a lot of dollar bill sized pieces of paper. The large cannon in front was packed with a *lot* of black powder, and even more sand. With Larry at his remote detonator, and the rest of us a safe distance away, the countdown began 3...2...1...BOOM!!!

The room shook like Mt. St. Helens was going off again—I don't mind telling you it gave me a good scare. But miraculously my shutter finger did not panic, and I got a great shot of the door flying through the air with the greatest of ease (*see photograph 12*). All the little black dots in the photograph are clumps of sand which were propelled by the black powder, which certainly did a good job of blowing the door off! As you can see, the "money" went everywhere.

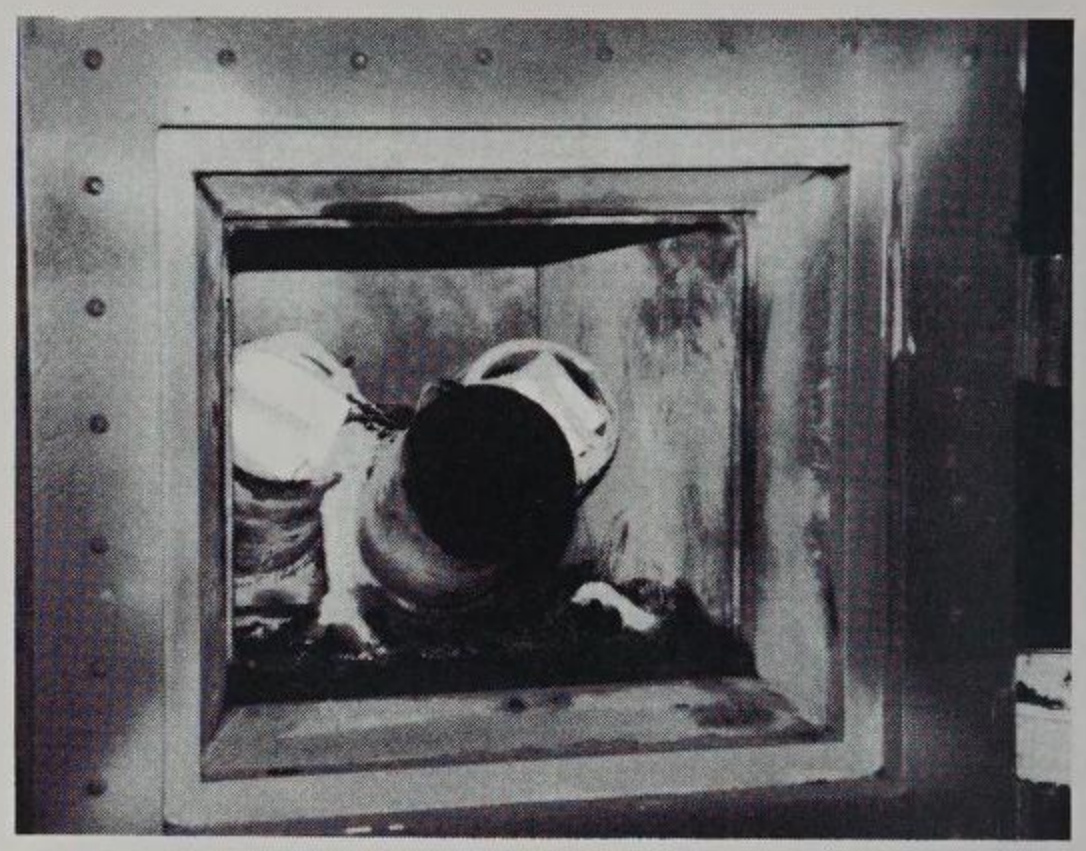
All in all, it was both a romp and more. No kidding, I had an absolute blast. And does Burt know how to throw a party! But I had better shut-up before I take all the fun out of the movie for you. For those of you with onetrack minds, yes, Loni was around, but Burt had her under close supervision at all times. Rats!

At this point, it is hard to predict how successful "Break-

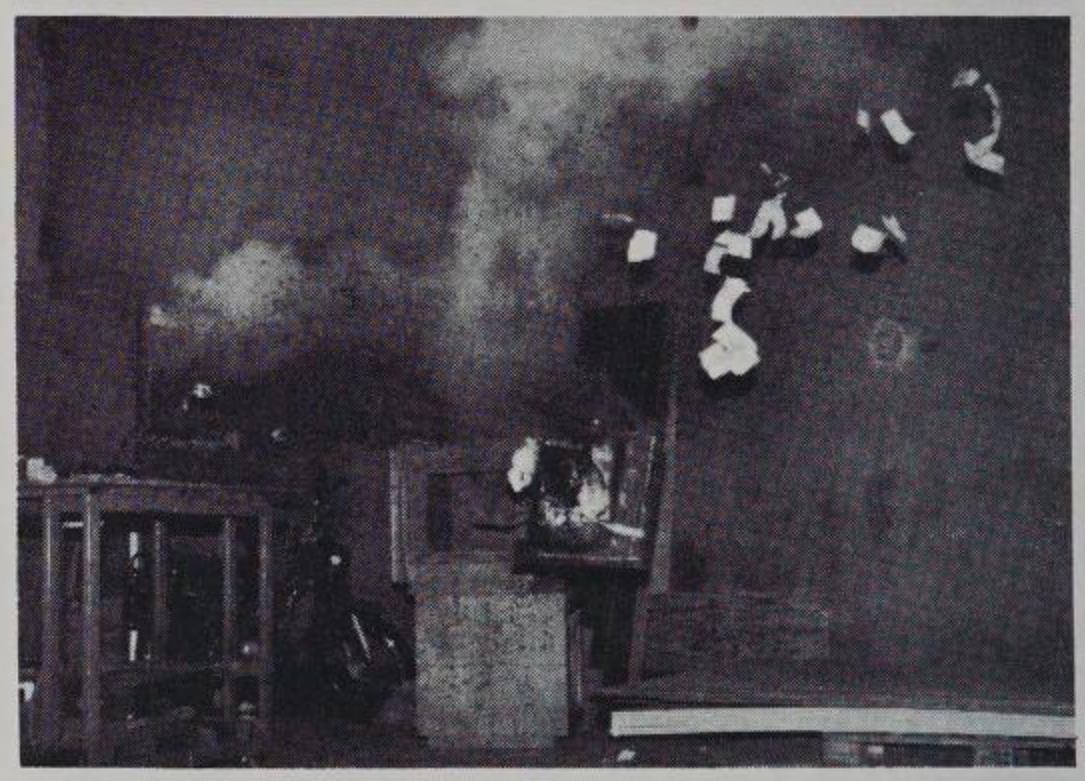


10. Replica used to practice for "Bell" chest explosion.

ing In" will be. I don't think James Caan (Thief), Whoopi Goldberg (Burglar), Donald Sutherland (The Great Train Robbery), or Ryan O'Neal (The Thief Who Came to Dinner) ever won an Academy award for their respective first-rate performances portraying second-story men/women. However, I believe all the above mentioned films have been at least marginally profitable, and they certainly are great entertainment. I can only hope the same will be said about "Breaking In"—in your favorite theatre this fall. ■



11. The safe, packed with explosives.



12. Safe in the process of exploding.

The truth: it was a blast working with the Hollywood folks, but the movie sucks. Bor-r-r-r-ing. My favorite movie with a safecracking scene: The Getaway, starring Alec Baldwin and Kim Basinger.

Minneapolis Safe Seminar

"Nearly all the safes were opened with one small clean hole. As usual, however, there were a few problems, and I'll cover the most interesting problems."

by Dave McOmie

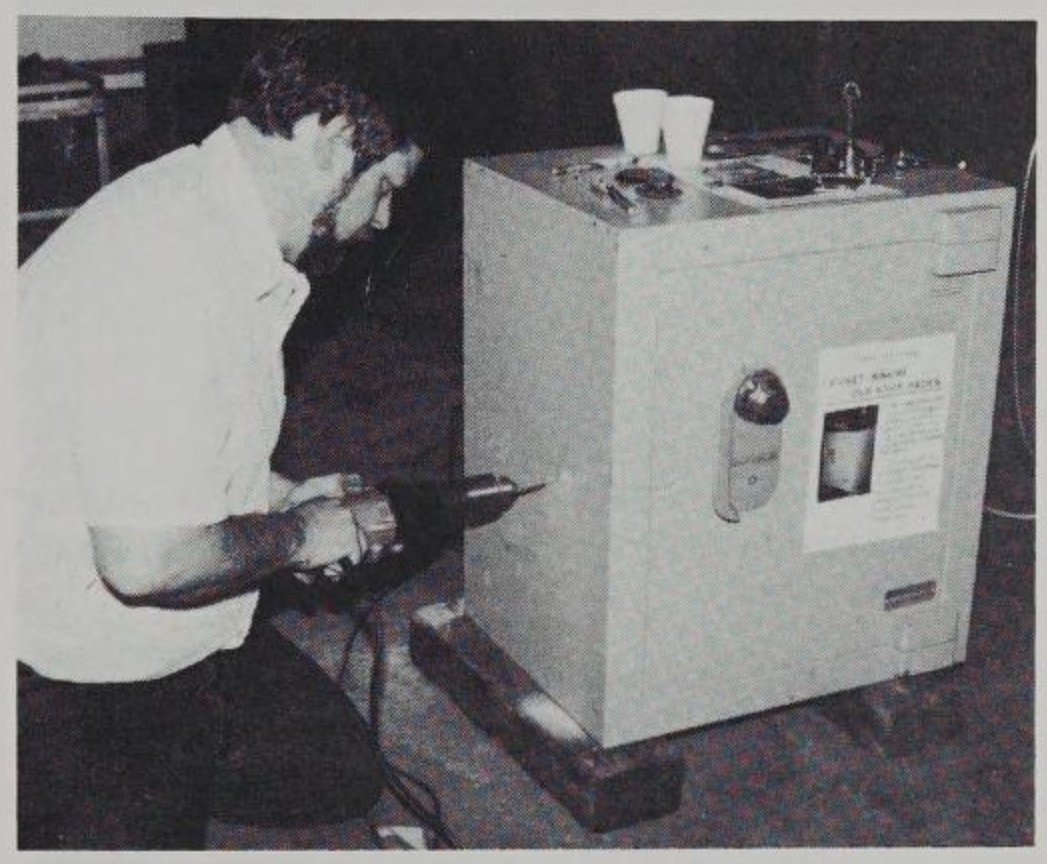
Early this summer I teamed up with Bob Taylor of Safecracker's International, fellow freelance safeman Arnie Foslien, Olympus borescope wizard George Stockley, and the folks at Floyd Security, to throw the first ever Minneapolis Safe Penetration Fiesta. As most of you probably know, fiesta is Spanish for festival. Now I suppose it can be argued that the atmosphere surrounding this kind of even is more carnival than festival, but in any event, we had a great time.

The morning of the first day (it was a two-day event), I walked into the single largest building I have ever seen inhabited by a safe and lock company. In fact, it so awed me that I just had to ask. Try this on for size: Floyd's main building tips the scales at a whopping 28,000 square feet! To be sure, there was plenty of room for two dozen guys to drill their brains out, and believe me, that is exactly what we did!

Looking over the safes that Arnie and the people at Floyd had rounded up sent that familiar tingle racing down my spine. This was going to be a challenge. With their doors firmly locked, and defying us to open them were the following safes: Fichet Bauche old-style Arden; John Tann ATM; Diebold "Tisco" Manganese Steel Square Body Cannonball; the lower compartment of the cannonball; Safe Cabinet fire safe; size 3 Mosler TRTL-30 dual-bolt lug door (yes, with Relsom!); size 0 Mosler dual-bolt lug door; Major TL-15 round door; Major TL-15 square door; Herring-Hall-Marvin lug door; Herring-Hall-Marvin fire safe; MacNeal & Urban jeweler's chest; Cary fire safe; Diebold Filing Safe; Protectall fire safe; Mosler TL-30 square door; Hall's fire safe; Diebold Cannonball; one unidentified round door; and one unidentified square door. Whew!

After our morning coffee and informal get-acquainted bull session, we got down to the business of opening safes. Attached to each safe was an instruction sheet detailing my suggested method of entry. Students who felt they knew a better way were encouraged to bring it to my attention. And you know, it never fails, at least once or twice at every seminar somebody shows me a new trick, and this seminar was no exception. Don't tell any of my students, but the truth is that this instructor usually learns as much as any of his students! No kidding, there is no better way to learn something than to teach it. But enough pedantry; on with the Fiesta.

To begin at the end, I would just like to say that nearly all the safes were opened with one small clean hole. As usual, there were a few "problems," and also as usual I am going to spend part of this article covering the most interesting problems that we ran into.



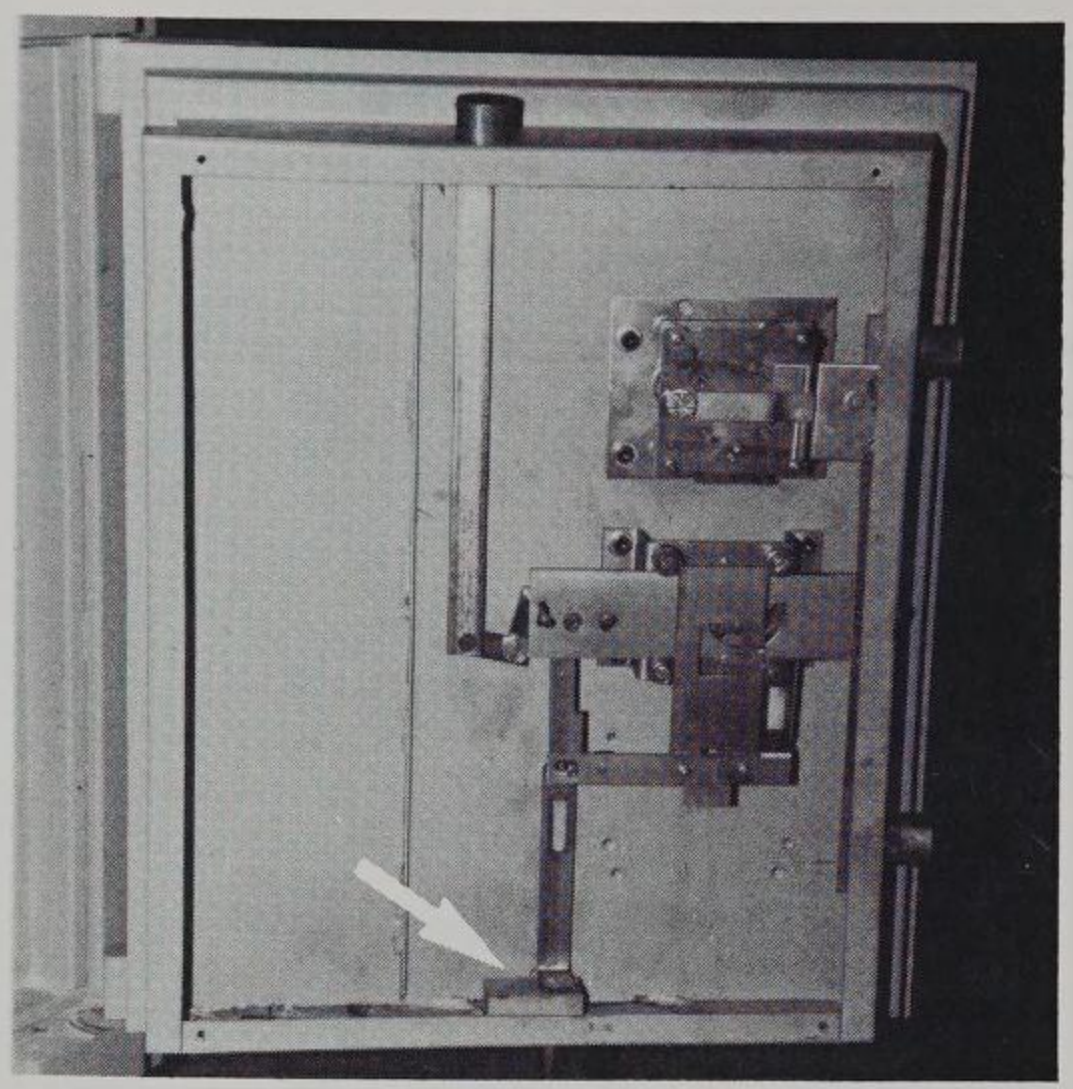
1. Walt Peterson drilling an old-style Fichet-Bauche Arden.

Photograph one shows Walt Peterson drilling into the side of one of our problems. This is an old-style Fichet-Bauche Arden. Notice there is no bolt control handle. It is equipped with two locks: the Fichet C2C combination lock, and the Fichet Monopole keylock. At this point, we had already opened the C2C by drilling through the back and using a direct-view Olympus borescope to line up the red dots on the back of the combination lock. As I saw it, we had two choices with the keylock. We could either use a trick I like through the keyhole, or go through the side to defeat the keylock. Unfortunately I decided to go with the latter.

After removing one of the pins from the cam on the back of the keylock, I was attempting to retract the boltwork when the bottom boltrail dropped down a little and deadlocked itself. Aargh! This is the definition of a real boo-boo. It was ugly. I think everybody had a crack at this one before Walt Peterson and Jerry Holscher got serious about driving the relocked bolt back. It was a mean little bugger, but Jerry swings a meaner hammer, and finally the door swung open.

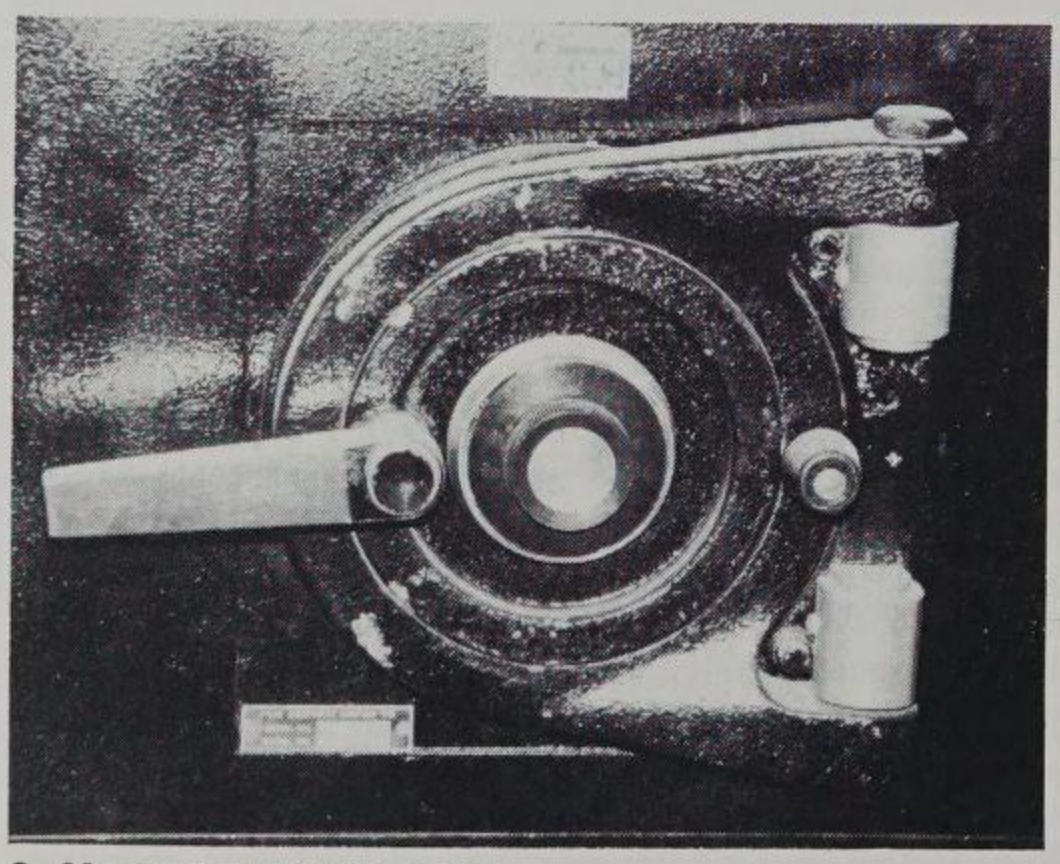
The inside of the old-style Arden is shown in photograph two. The arrow is pointing to the relocker housing through which the bottom bolt travels when it is not deadlocked.

The top lock is the C2C combination lock. The bottom lock is the Monopole keylock, and as you can see, the



2. Inside the Arden. Note the relocker housing.

keylock is responsible for retracting all the locking bolts. The interesting thing to take note of is the fact that the keylock operates two sliding plates instead of the usual one. The inside one slides horizontally, and the outermost one slides vertically. Both must slide together at the same time to retract the boltwork. That last bit of information is the critical one, and I assure you it is one piece of information I won't soon forget!



3. Mosler 0 dual bolt lug door.

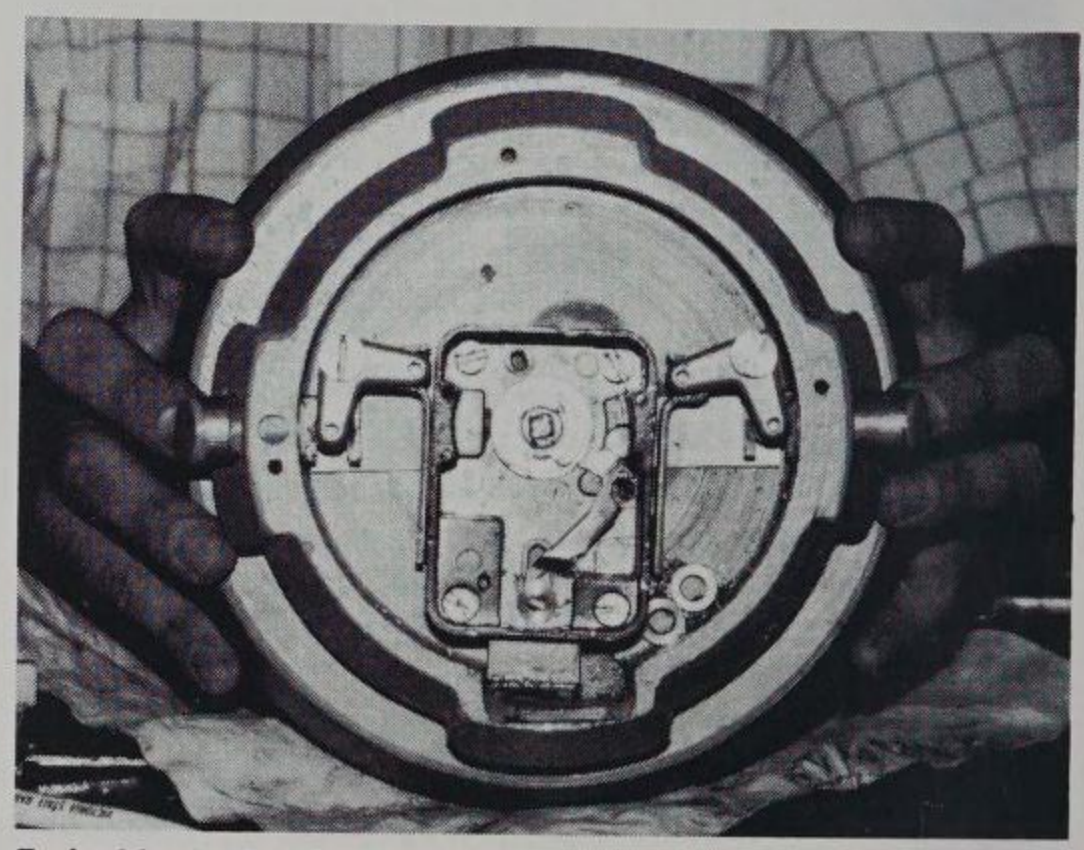
Photograph three is of the Mosler size 0 dual-bolt lug door. Notice the absence of any visible bearing plate screws. On Mosler's smaller doors (size 00; size 0; size 2) the bearing plate screws are under the dial ring. The threaded holes go 2/3 through the door. Are you thinking what I'm thinking? If one of the holes is in a strategic location, then we can take a shortcut. This door has a MR302 combination lock mounted vertical down. The fence is at 67 × 1⅛″; coincidentally, one of the mounting screws is at 67 × 1¼″. Angling in just a hair with a ¼″ bit does the job nicely.

This is exactly what the guys are doing in photograph four, with the aid of a Lee Rig to get through the smooth hardplate.

The hole was perfect, the fence was removed, and in

4. Using a Lee Rig to shortcut into the Mosler.

photograph five we see the inside of the door. The MR302 is mounted VD, and the bellcranks operate bolts at 3 and 9 o'clock.

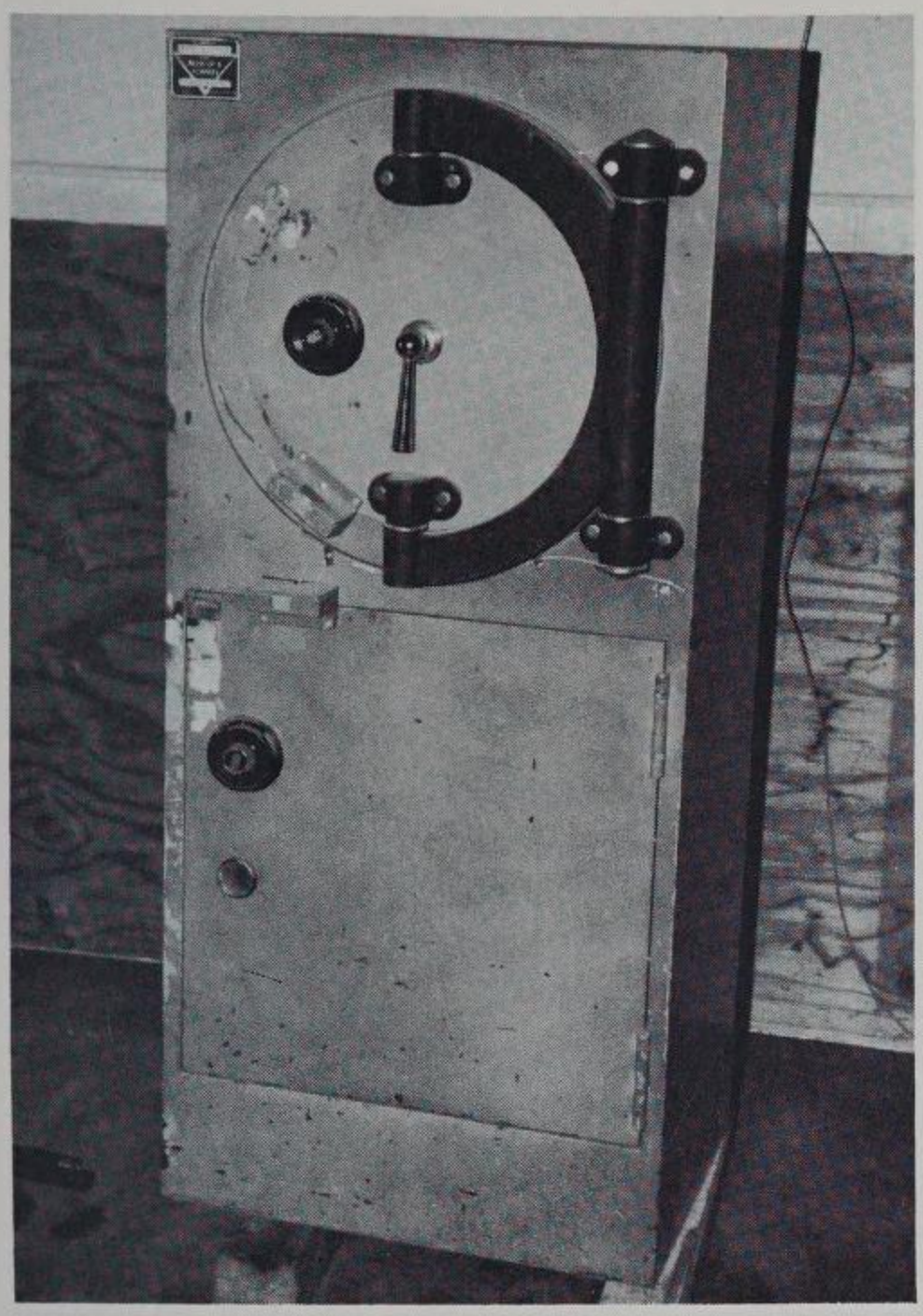


5. Inside the Mosler door.

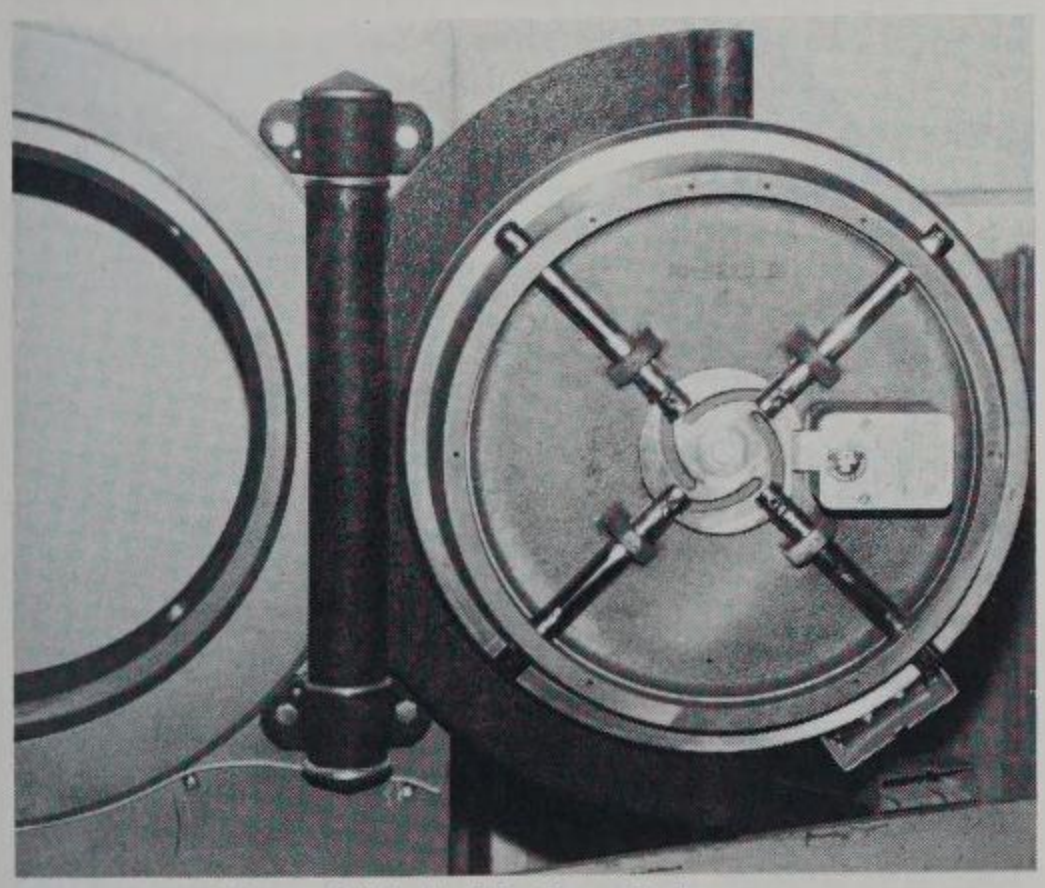
The mystery safe of the seminar is shown in photograph six. Anyone reading these words who recognizes this safe is duty bound to relieve the rest of us of our ignorance! This one was the subject of a little illegal gambling pool in which most of us (correctly) guessed the lock to be an S&G 6730 mounted LH.

Norm Brauner went to town on this one. Norm had never drilled open a safe before this day, but under proper tutelage he performed like a real pro. I wasn't using a stopwatch, but I believe Norm took all of 30 minutes (including a 15 minute wait for the time-delay to run down) to swing the door open and expose the inner workings to my camera (*see photograph 7*). There are four locking bolts, at 1:30, 4:30, 7:30, and 10:30. The bolts are controlled by a cam plate that is very similar to one we might expect to see in a lift-out round door. The old-style Sargent and Greenleaf Timebination completes the picture.

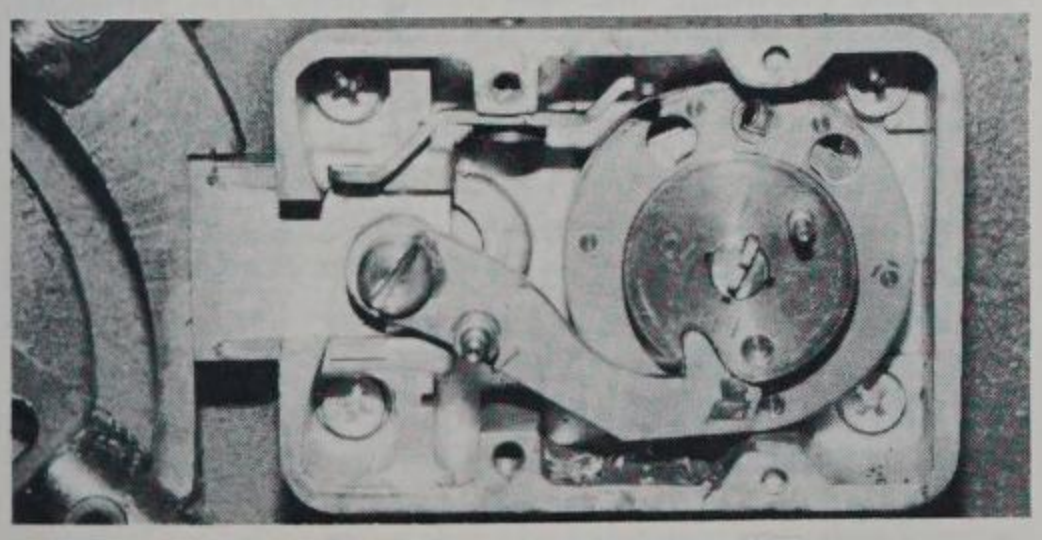
Photograph eight is a close-up of the lock with the piggyback movement removed. The most important thing to take note of is the left hand (LH) mounted lock. This puts the



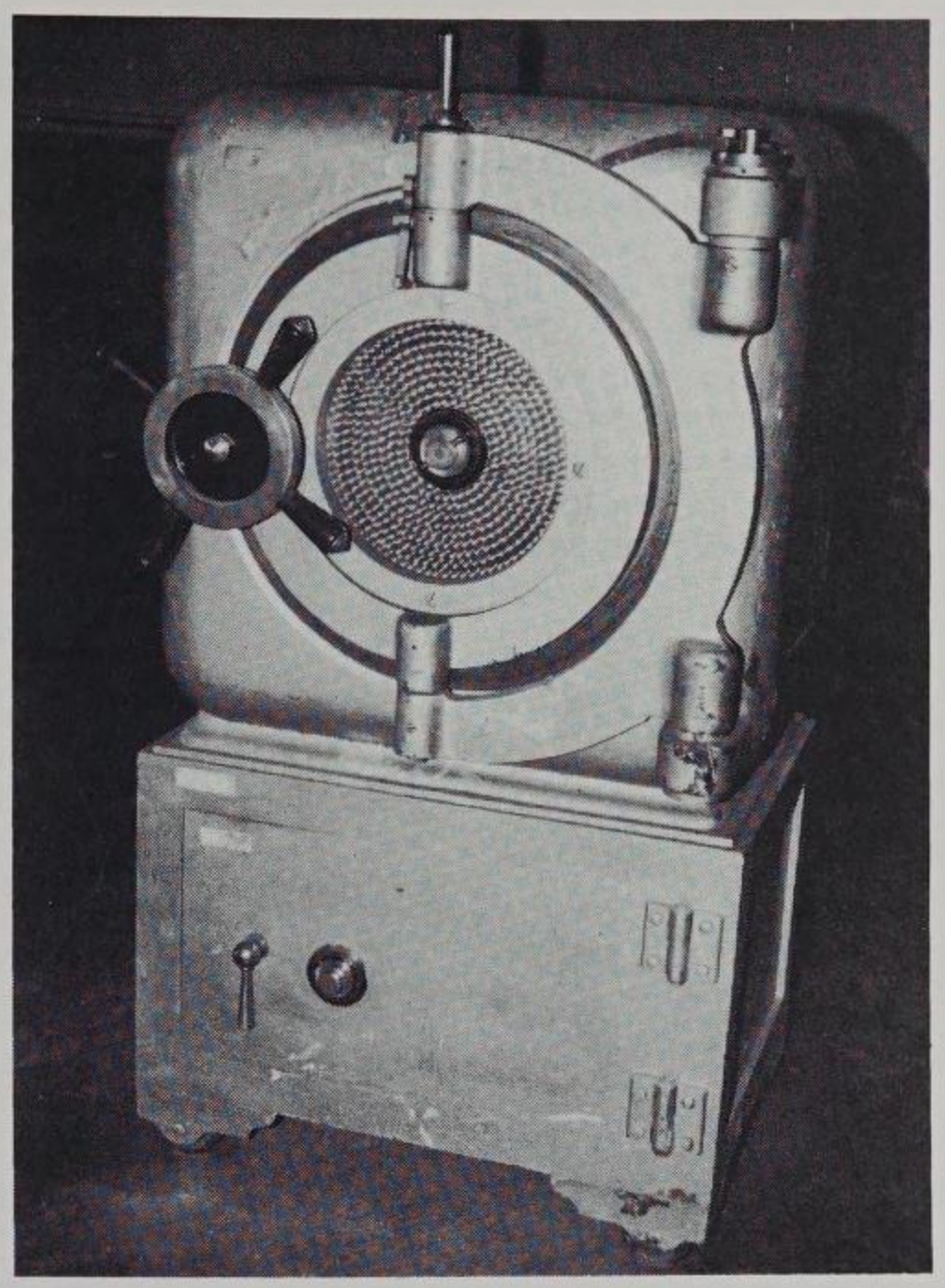
6. Safe with an S&G 6730, mounted LH.



7. Inner workings visible inside the safe door.



8. Old-style Sargent and Greenleaf Timebination.



9. Diebold "Tisco" Manganese Steel Square Body Cannonball.

fence on the bottom of a right hand lock, which is exactly what we had planned for. Congratulations Norm!

In photograph nine, we are getting serious. This is the Diebold "Tisco" Manganese Steel Square Body Cannonball, and it was by far the most interesting safe of the weekend. I had never taken one apart, but Arnie had a photograph of a similar looking Diebold. From his photo, we deduced that it likely used the same 3½" geartrain we are used to seeing in Diebold's jeweler's chests, and it appeared to be pointing nearly straight down from dial center.

Based on the preceding assumption and deduction (which was a hair better than a wild guess) I measured and marked a drill point intended to bring us into an open spot in the lock case. We had just about every drill rig made at our disposal, but the one best suited for use on a cannonball was the

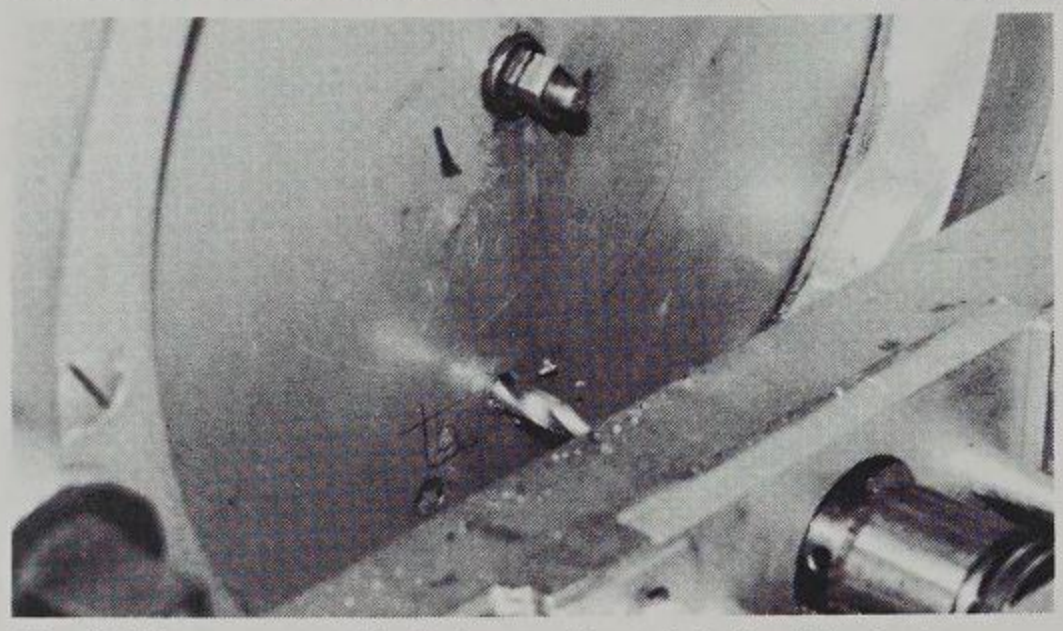
10. Mark Lunblad drilling the Diebold with a Willie Schock drill rig.

heavy-duty rig built by Willie Schock. Mark Lunblad had his with him, so we turned Mark loose with his rig, and away he went as you can see in photograph 10.

The "Schock" rig worked shockingly well. In fact, I would say it is the strongest safe drilling rig I have ever seen. It is a little bulky for everyday use, but when heavy-duty is required, a little extra bulk can be tolerated. It uses an onboard Milwaukee 5370-1, which is one of the strongest pistol grip type drills ever made.

Several hours later, using a ⅜ × 12″ carbide bit, Mark finally broke through. This was one thick safe. Over came George Stockley and the TV set. Sticking a scope in the hole, I was genuinely surprised to find we had missed the lock altogether!

After briefly trying a few tricks, we put Mark back to work on hole number two. In photograph 11, Mark is making progress about an inch over and an inch up from hole number one, with a Strong Arm 5/16 × 8″ carbide bit. This time we were right on the money. We dialed the gates up on



11. Drilling a second hole in an attempt to find the lock.

the TV screen, transferred the numbers to the drop-in point, and hit it on the fourth try. Bingo on the Tisco!

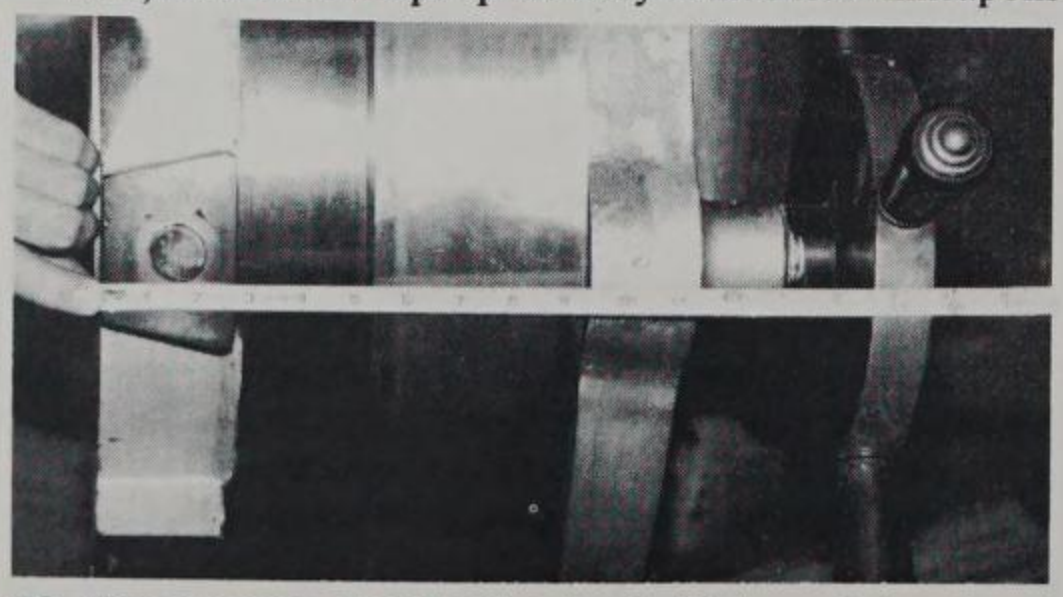
As soon as Mark cranked the door open, I put a tape measure up and snapped off photograph 12. As you can see, the total door is nearly one foot thick!

Photograph 13 shows the inside of the door with the two locking bolts retracted. The three-movement timelock is stacked above a four-wheel Peerless "anti-dynamite" combination lock.

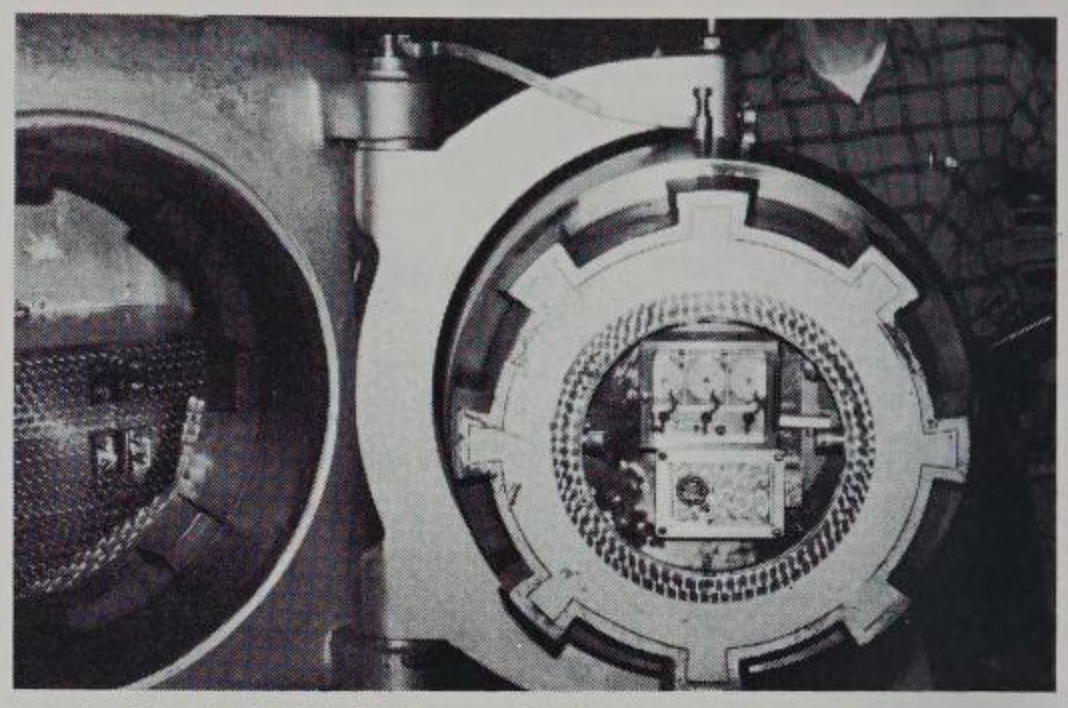
Photograph 14 is a close-up of the combination lock with its back cover off and the timelock removed. Here things are getting interesting. Observe the gear visible just above the lock. The arrow is pointing to the hole that opened the cannonball.

Photograph 15 exposes the secret to this cannonball. Yes, it uses a triple geartrain, but the gears are a little smaller than usual and they are not in a straight line. For your information the offset from dial center to actual wheel center is 2⅛″.

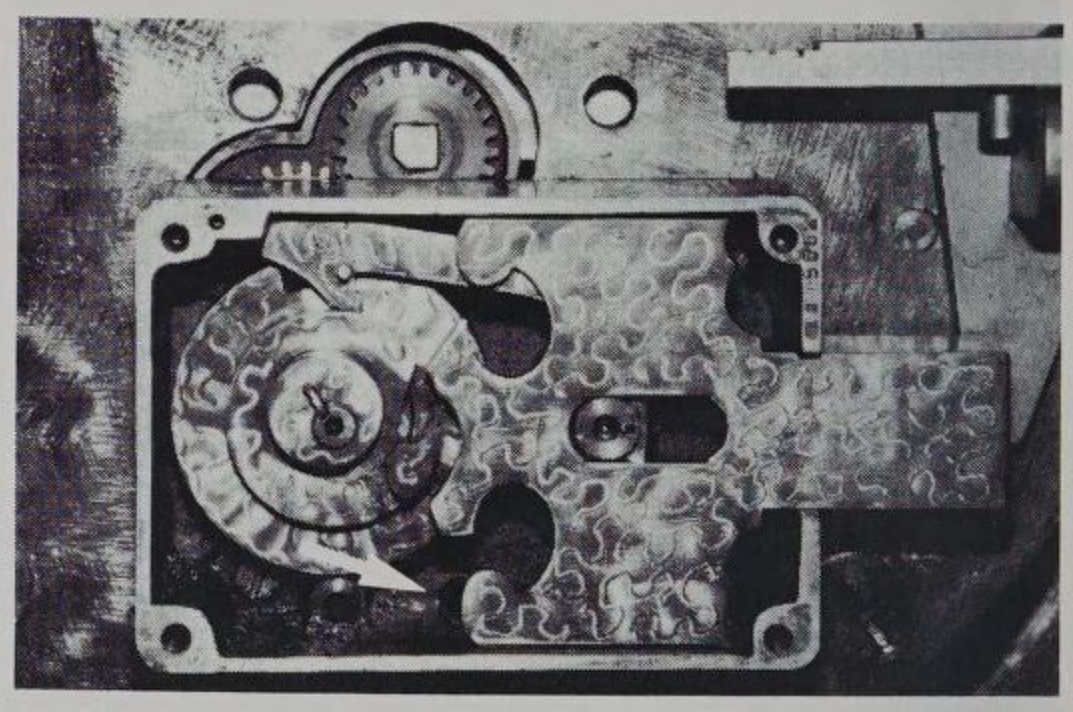
Well, that about wraps up the story of the first Minneapolis



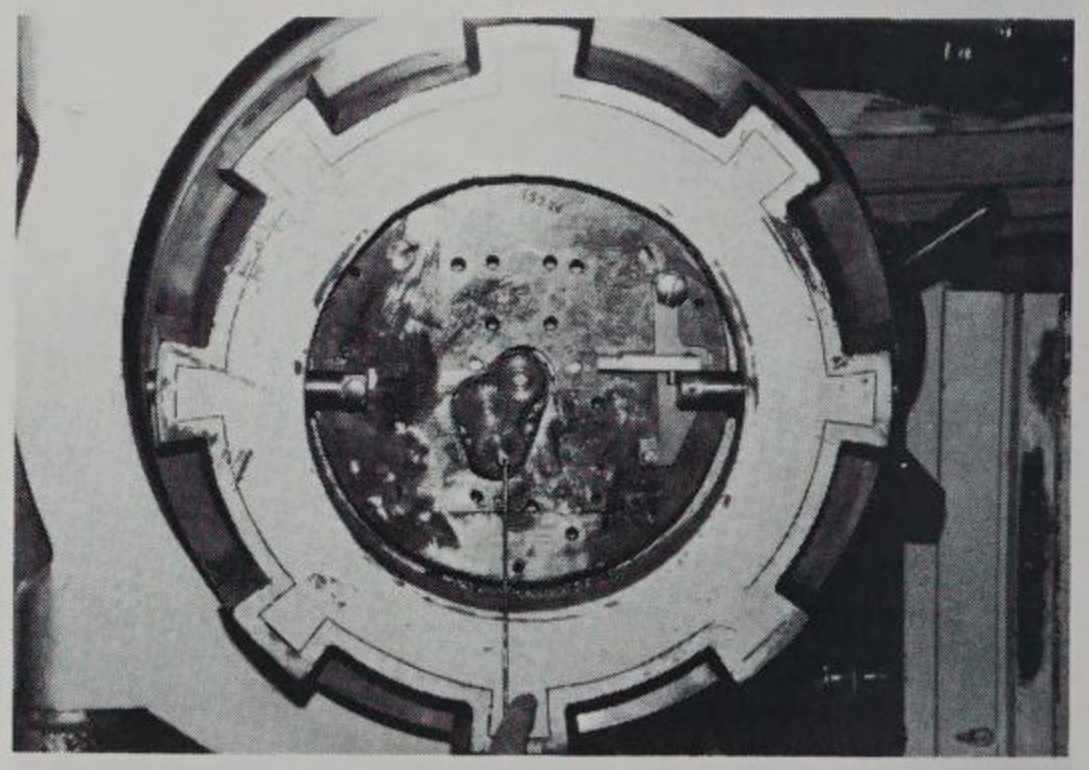
12. Tape measure showing the door's thickness to be almost one foot.



13. Inside the Diebold door with the locking bolts retracted.



14. Combination lock close-up. Note drill hole.



15. The triple geartrain that operates the cannonball.

Safe Penetration Fiesta. In closing I would like to thank the following people: Arnie Foslien for his help in collecting safes and providing first-rate instruction; Jerry Holscher, Walt Peterson, and the rest of the gang at Floyd Security—without their help, this Fiesta could never have taken place; and once again my sincere thanks to George Stockley and the Olympus Corporation for their continued support.

For more information on the Willie Schock drill, contact Willie Schock at 222 E. Central, Minot ND 58701. For more information on Olympus borescopes, contact George Stockley at 1800 Sandy plains Parkway, Suite 307, Marietta, GA 30066. If you are interested in either attending or hosting a Safe Penetration Fiesta, contact Bob Taylor at Safecrackers International, P.O. Box 110099, Aurora, CO 80011. Or call Bob at (303) 340-1524. See you soon. ■

Cracking a Tough Mosler

"By the time I arrived, the customer had already twisted off the dial attempting to force the safe open. We reattached the dial and still couldn't open it."

by Dave McOmie

Exceptions, exceptions, exceptions. It seems there are exceptions to every rule. Even I make a mistake once in a while! Honest. And for the skeptics, I offer this month's article as incontrovertible evidence of my fallibility. Simply proceed down the page.

The call came from Tom Davis of ABC Locksmith Service in Chehalis, Washington, about 80 miles to the north. The safe came from Mosler, in Hamilton, Ohio about 2,000 miles to the Southeast. The thick hinge and silver hinge caps identify it as a new-style lug door.

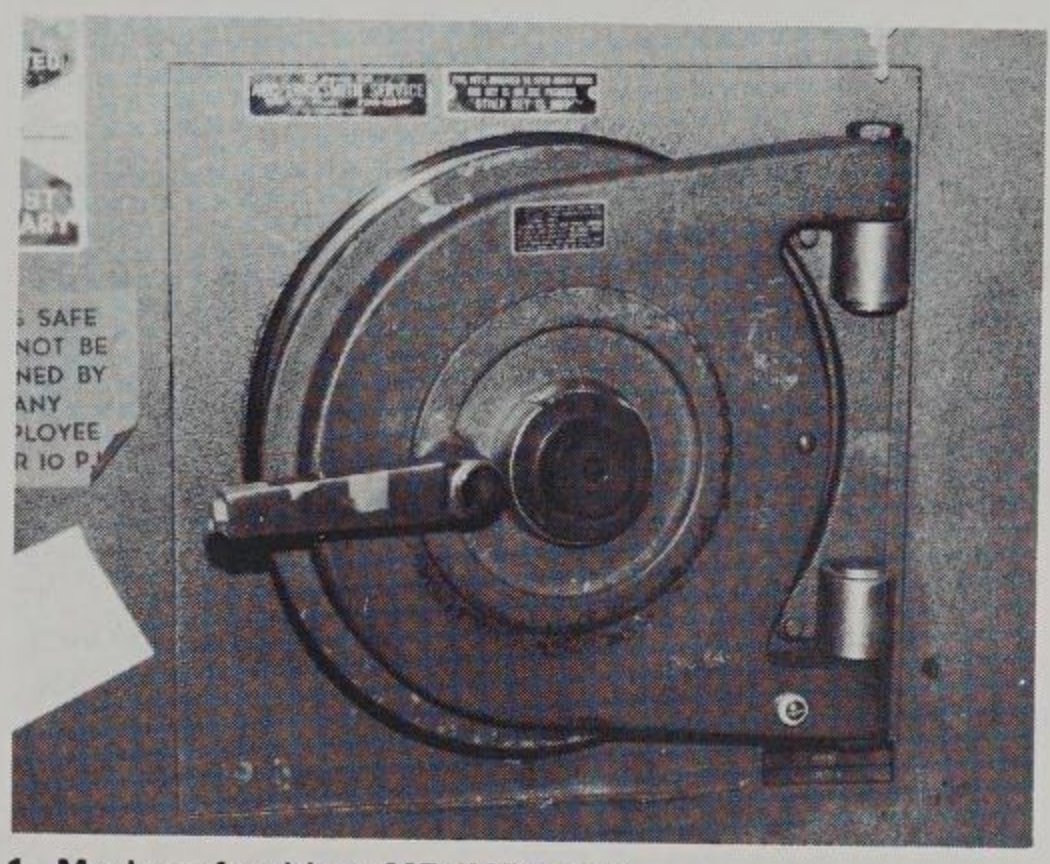
The pull-out new-style dial indicates an MR/MRK 120, which, in the new-style doors is always mounted LH, or so I thought. (*See photograph 1.*)

By the time I arrived, the customer had already twisted the dial off attempting to force the safe open. Tom had reattached the dial and tried to dial it open, but to no avail. Ditto my efforts. At this point, unsure of the cause of the lockout, I decided to use the "foolproof" method of opening a malfunctioning 120: drilling out the lever post.

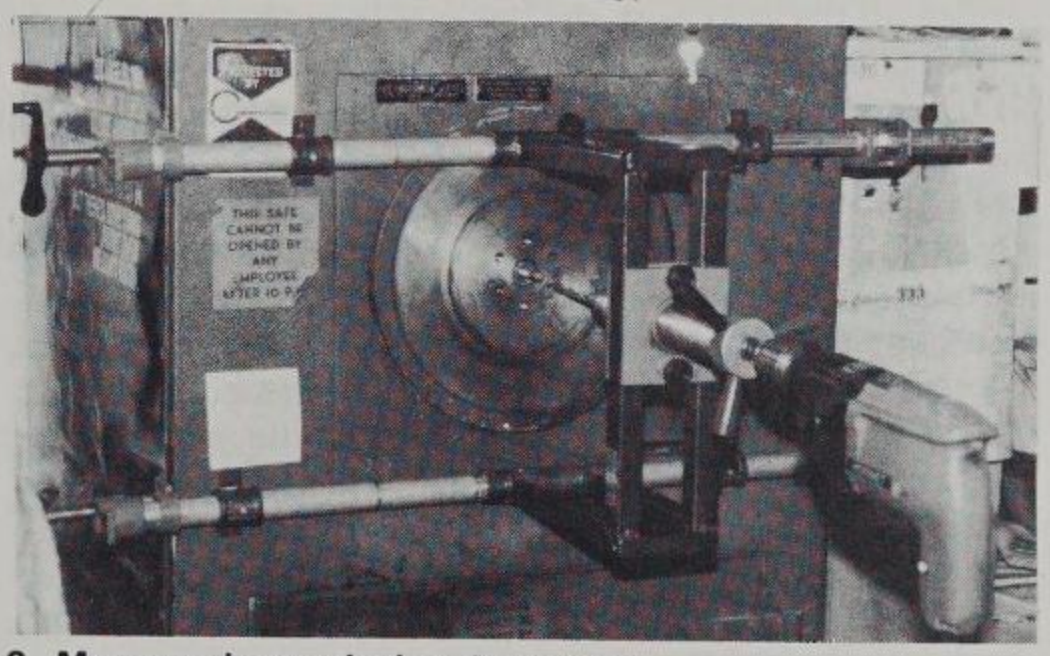
The dial was pulled, the bearing plate removed, and on the assumption that the lock was mounted LH, the drill point for the lever post was marked at 1⅜" RC, 9/16" *down*. Next, we affixed the Magnum rig to the safe and started removing steel (*see photograph two*).

Photograph three shows something I found to be unusual. Instead of the usual three bearing plate screw holes normally found on a size 2 Mosler, this one has *six*! On reflection this makes sense, as we will see a little later. Notice the position of the drill bit. Going for the lever post with a 5/16" drill bit results in a small amount of thread loss from the 4 o'clock bearing plate screw hole. No problem.

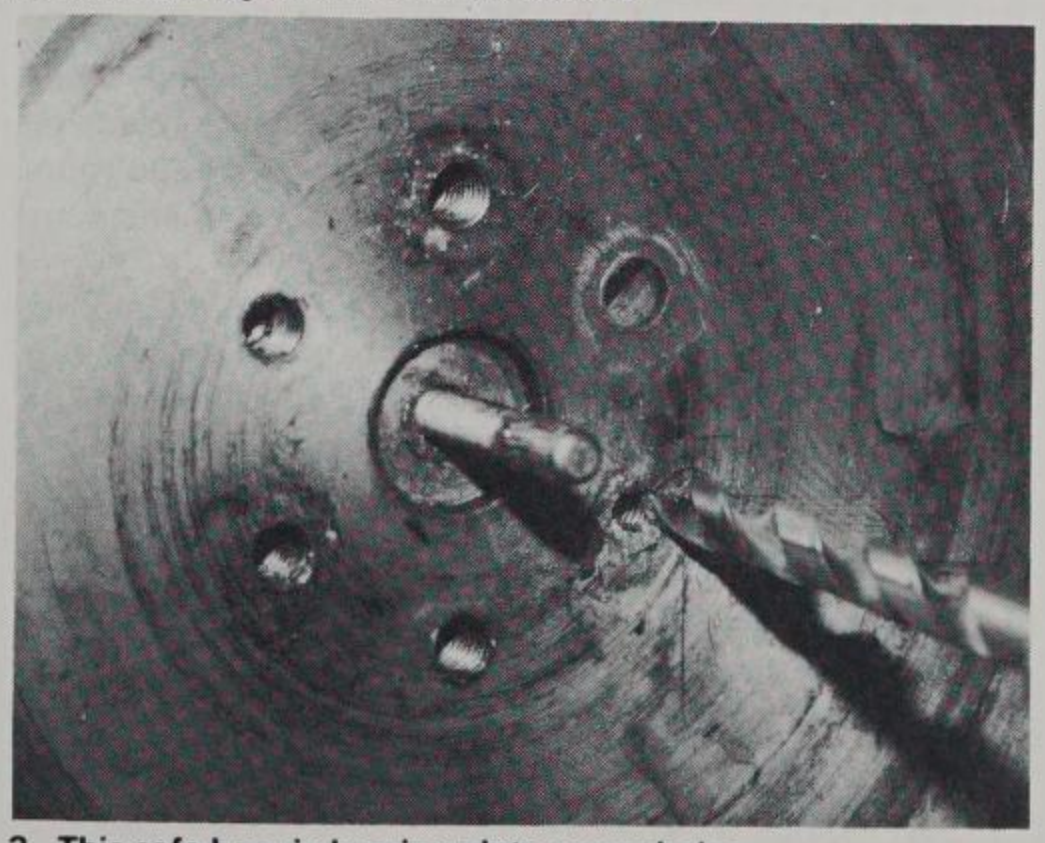
The mild steel was easy. The copper was easy. But then we were met, head-on, by my old friend, Relsom. Relsom was sandwiched into this door about the time Cassius Clay was winning the Olympic Gold Metal in Rome. Nearly 30 years later, Relsom still holds the title as one of the greatest hardplates ever. Similar, but superior to modern Maxalloy, Relsom is dreaded by all mortals who have ever had occasion to tangle with it. Thankfully, modern technology has made available several tools and techniques which render the old punch and drill method unnecessary in most cases. As usual, all it takes is money!



1. Mosler safe with an MR/MRK 120.



2. Magnum rig attached to the Mosler.



3. This safe has six bearing plate screw holes.

One very effective, but somewhat risky tool is the mini-lance. Conditions must be just right for its prudent use; with computers and other electronic gear close by, I did not feel comfortable enough to fire it up. Another recent innovative adaption to our industry is the diamond core bit sold by Lockmasters as the Diamatip. At about fifty bucks a piece, the little buggers are expensive, but the savings in terms of wear and tear on body and soul make price a secondary consideration in my book.

I have used Diamatips with great success on the Maxalloy in Gary and Knight square doors. The secret is to keep the bit well lubricated. The bit comes packed with Blue-Lube, but it helps to re-pack the tip every so often. This holds the friction and temperature as low as possible, keeping more diamonds intact. No matter what the commercial says, a diamond is not really forever, but liberal stuffings of Blue-Lube can extend its life for a while at least.

Even with frequent applications of Blue-Lube, it took several Diamatips (ouch!) to make it through the ½″ plate of Relsom. The core came out in one impressive piece (a souvenir for Tom's collection) and the mild steel backing was penetrated in short order. Breaking through, I began to count my chickens...before they were hatched, as it were. Looking in the hole, I muttered an unprintable expletive under my breath.

The hole was completely outside the lockcase—the darn thing was mounted RH! I snaked my 4mm flexible fiberscope through the hole and took a look around. Articulating left, around the lockcase, over to the main locking bolt, the problem became apparent: the spring-loaded relocker inside the main locking bolt was set off. Even if we had drilled off the lever post, the bolt would not have retracted.

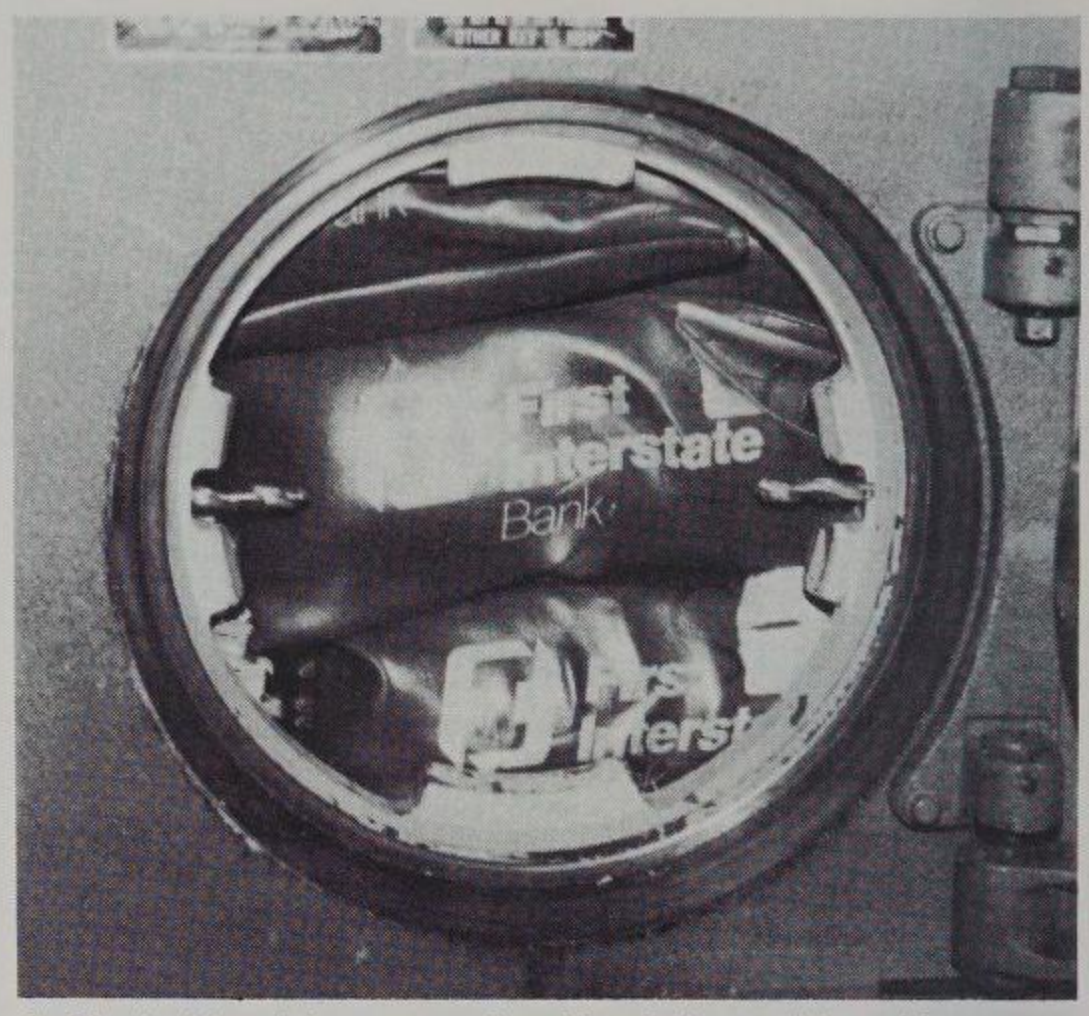
Not imagining there might be anything else worth looking at, I gently withdrew the flexible and moved around to the side of the safe. 2¾″ back, in line with the 9 o'clock locking bolt, the drill point was measured, marked and double-checked. Drilling through the outer skin, hammer-drilling through eight inches of concrete, and drilling through another plate of mild steel, brought us dead center against a free spinning Relsom pin about ½″ in diameter. Fine, just fine. The hole was too deep to use a Diamatip, so out came the mini-sledge and extra long punches—time for a little manual labor!

Quite a while later we made it through, right on the money. Two raps with my 3 pounder drove the bolt straight back into the lockcase, but the darn door would not rotate. Back in the hole went the flexible, for another look around. This time, looking straight down, I saw a thermal link laying at the bottom of the door. This meant the 3 o'clock relocking bolt was set off! I couldn't believe it. I searched the room ...Murphy was nowhere to be seen, but was undeniably present.

Tom and I took turns fishing through the hole, attempting to hook the bolt and pull it back, but the spring was too strong to overcome with what we had. So around to the hinge side we went, and executed the same back-breaking procedure we had just performed on the opening side. This was going to be a backache night for sure.

Photograph four is picture proof of our eventual success. One hole through either side—easier said than done! It is amazing how straight you can drill when your helper is equipped with a T-square.

On the back cover is arrayed an impressive display of medals (*see photograph five*). If safes were soldiers, this one would be a four-star General. The medal at the bottom is the



4. The inside of the open safe with a hole on either side.

5. Display of labels on the back cover of the door.

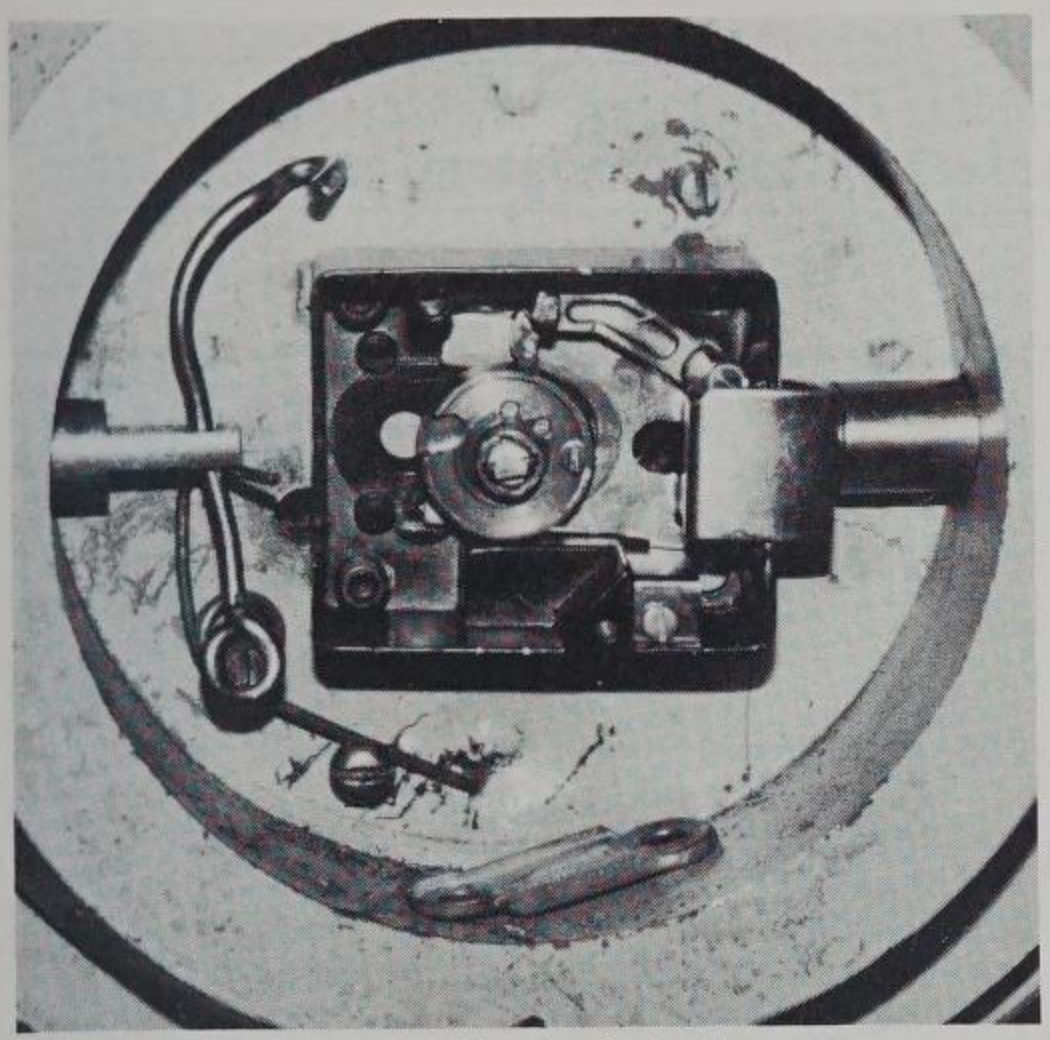
prestigious Underwriter's Laboratories TRTL-30, which is greater than or equal to a Silver Star. A real trooper in combat, this one!

Removing the back cover exposes the lock and boltwork as seen in photograph six. Notice the thermal link at the bottom of the door. I am inclined to believe that the thermal link was set off by vibrations from all the punching. It would be too much of a coincidence for both relockers to have gone off at the same time.

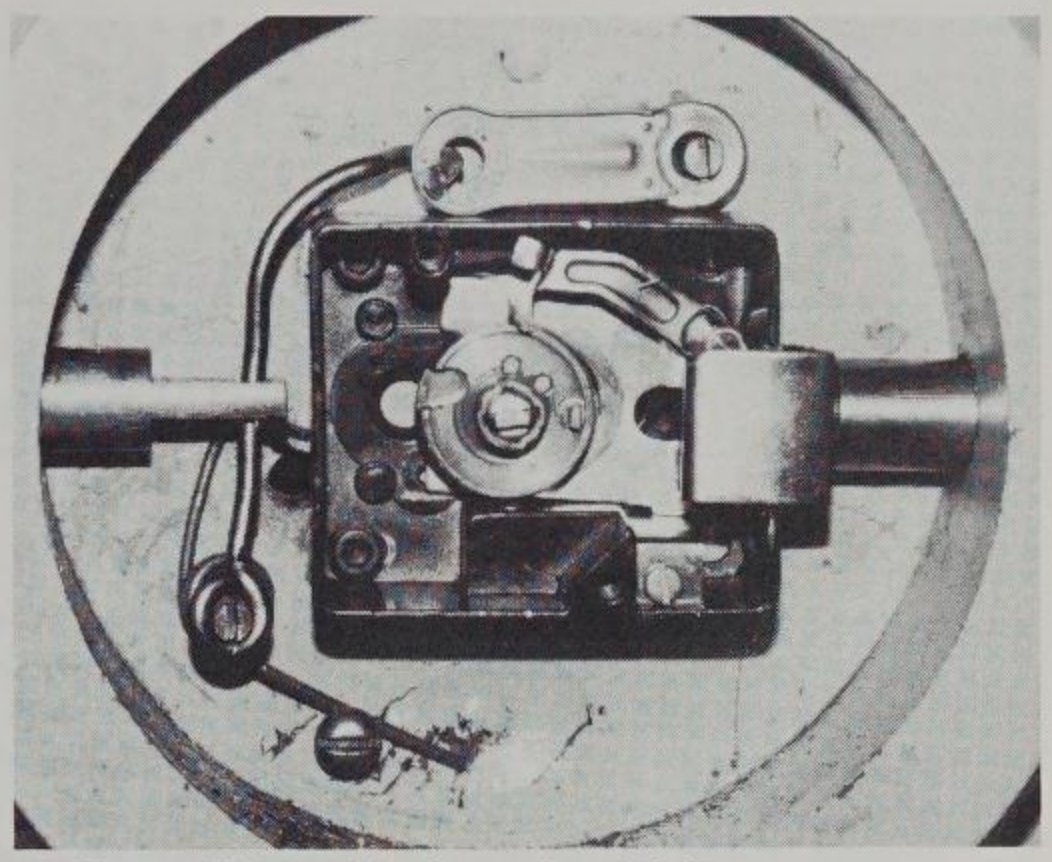
Take note of the RH mounted lock. In my experience this is a rare bird indeed, to be seen in a new-style door. It also explains the need for six bearing plate screw holes in the door. The bearing plate has three holes: at 12 o'clock, 4 o'clock, and 8 o'clock. By using six threaded holes in the door, it can be installed either right or left hand. There will be holes in the door to match up with the bearing plate no matter which way the door is mounted. As Dale Libby would say, simply diabolical!

In photograph seven the thermal link is back where it belongs, riding on the post at one end, and hooking the

spring at the other. Just to the left of the lockcase can be seen my airhole. In retrospect, it wasn't so bad missing the lockcase. Had the hole been inside the case, my scope would have been confined to viewing the lock innards. To spy on the



6. Lock and lockwork found under the back cover.



7. Thermal link back in place where it belongs.

locking bolts would have required a hole through the back of the lock, which I may or may not have thought of. I guess this is a feeble attempt to make a wrong call seem like a right call after all!

Right call or wrong call, anybody with experience or information on new-style doors with RH mounted 120's can give me a call, or better yet, write to me in care of this magazine. But please, no wisecracks about my infallibility! ■

I still think that seeing six bearing plate screw holes is the telltale clue to identifying this new-style lug door with the RH-mounted 120. But I have not been able to confirm it.

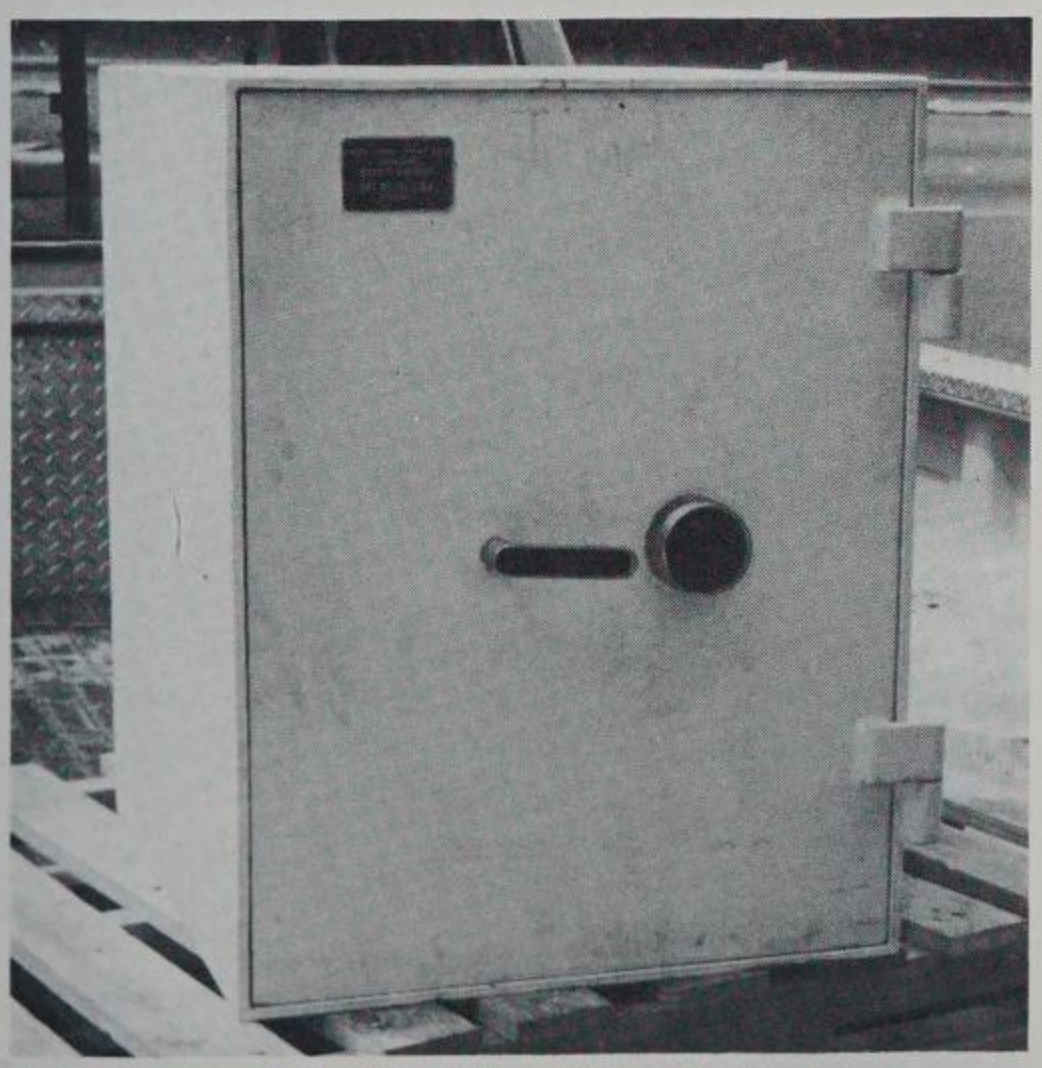
Art Metal Safe

"As I gulped down the last of my milk and turned to page 14 of my Spiderman comic book, the drill bit broke through the lock case. The hole was perfect."

by Dave McOmie

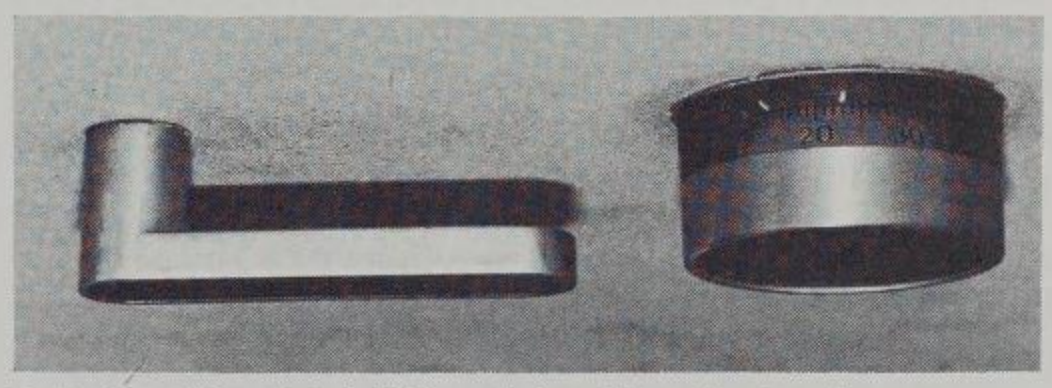
Hold it right there. There exists a misapprehension that I feel compelled to address before proceeding to this month's main event. Judging from the stack of letters that have found their way into my mailbox during the last week or so, more than a few faithful readers are convinced that I consider manipulation largely a waste of time. Well, I can assure you, this is *not* the case. I don't think manipulation is any more a waste of time than collecting coins, playing the guitar, or painting by number—all are activities I engage in from time to time. Hey, everybody has a hobby, right?

With that off my chest, let's get down to the serious business of drilling open a safe that Alexander Mundy, James Bond and even my good friend Skip Eckert could not manipulate. Our protagonist casts a sober glance at the camera in photograph one. This is an Art Metal Class 5 Security Container, custom made for Uncle Sam. It is rumored that this container was smuggled out of Felix Bloch's office, but I cannot get this verified at present. However, if a simulation of me opening this safe appears on the ABC World News Tonight, confirmation will be had.



1. Custom-made Art Metal Class 5 Security Container.

Photograph two is a top view of the La Gard Restrict-A-Vision dial and the handle. As you can see, it certainly does restrict the view of the numbers to the person looking directly down on the dial. Nothing a concealed overhead camera can't pick up, but at least the KGB's equivalant of Maxwell Smart peeking through the hole in his New York Times will not be able to lift the combination.



2. La Gard Restrict-A-Vision dial and handle, top view.

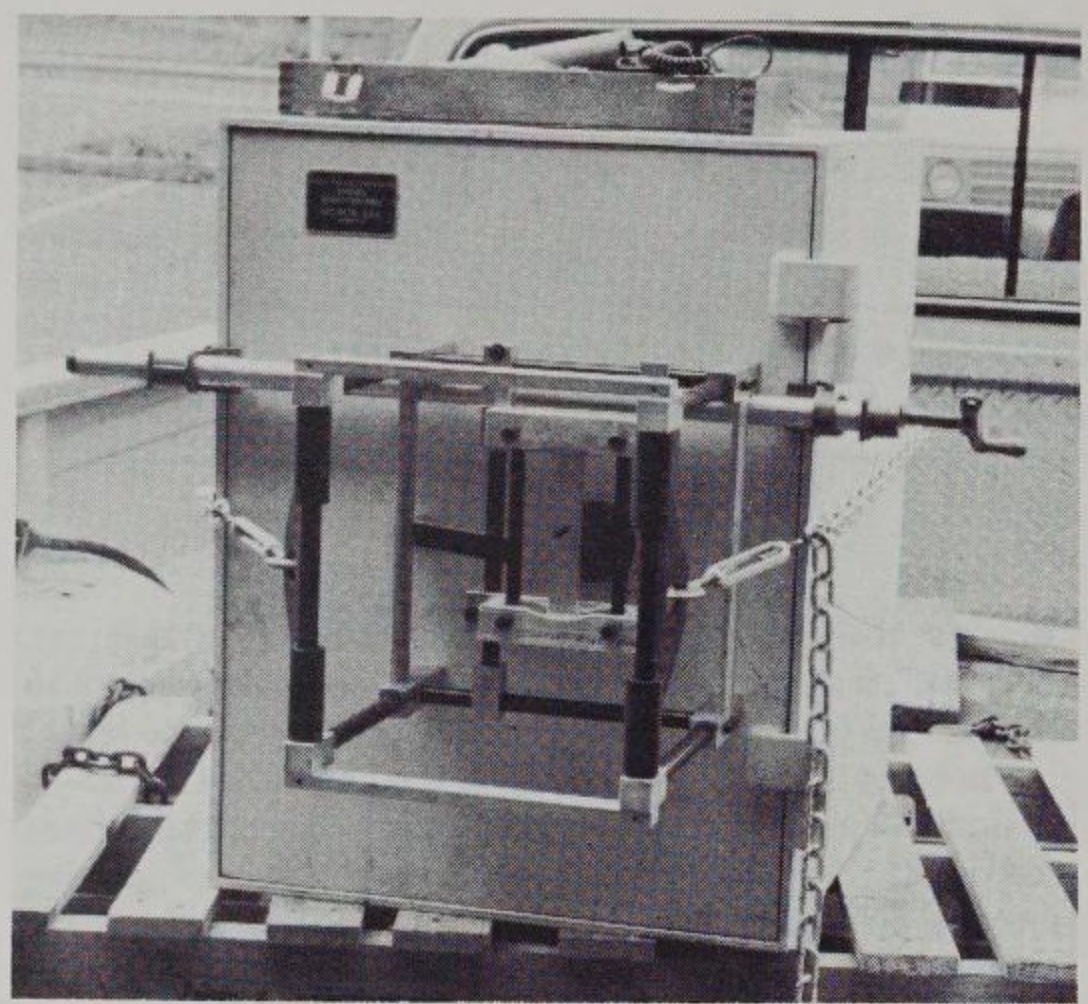
The situation was as follows: The safe, locked, with no combination, had been purchased by a private party at a local auction. The party had contracted with my customer, Dan Frazier of Associated Safe & Lock, to have the safe opened and repaired. Dan paged me, and as the saying goes, there we was.

Knowing that the La Gard 1980 manipulation-resistant lock was mounted right hand, we broke the dial off and marked the drill point at 97×⅞. With a 17/64 high speed bit, the outer skin was penetrated down to the hardplate. Switching to a ¼×4 Strong Arm, I leaned Black Bart into my Bosch Hornet, expecting to make quick work out of the safe whose manufacturer had so suddenly fallen from grace. (Evidently what was legal at HUD is not looked so kindly upon at GSA Procurement.)

After several bits and a lot of straining, it became obvious that this hardplate was tougher than I had anticipated. So I switched to the heavier duty Collins Drill Rig; Black Bart, after all, was designed only for the lightweight stuff. But a round and a half and several bits later I was still nowhere, and was persuaded to try out a rig I had had for some time, but never put to the test: The Framon DF-1.

I think everyone has the same first reaction. "Oh, it is too bulky and complicated and must be a bearcat to set up" is almost a universal initial response to the Framon. I'll admit it was mine. I'll also admit that I was dead wrong on all counts, but the rest of the article will make that abundantly clear, so enough confessing for now.

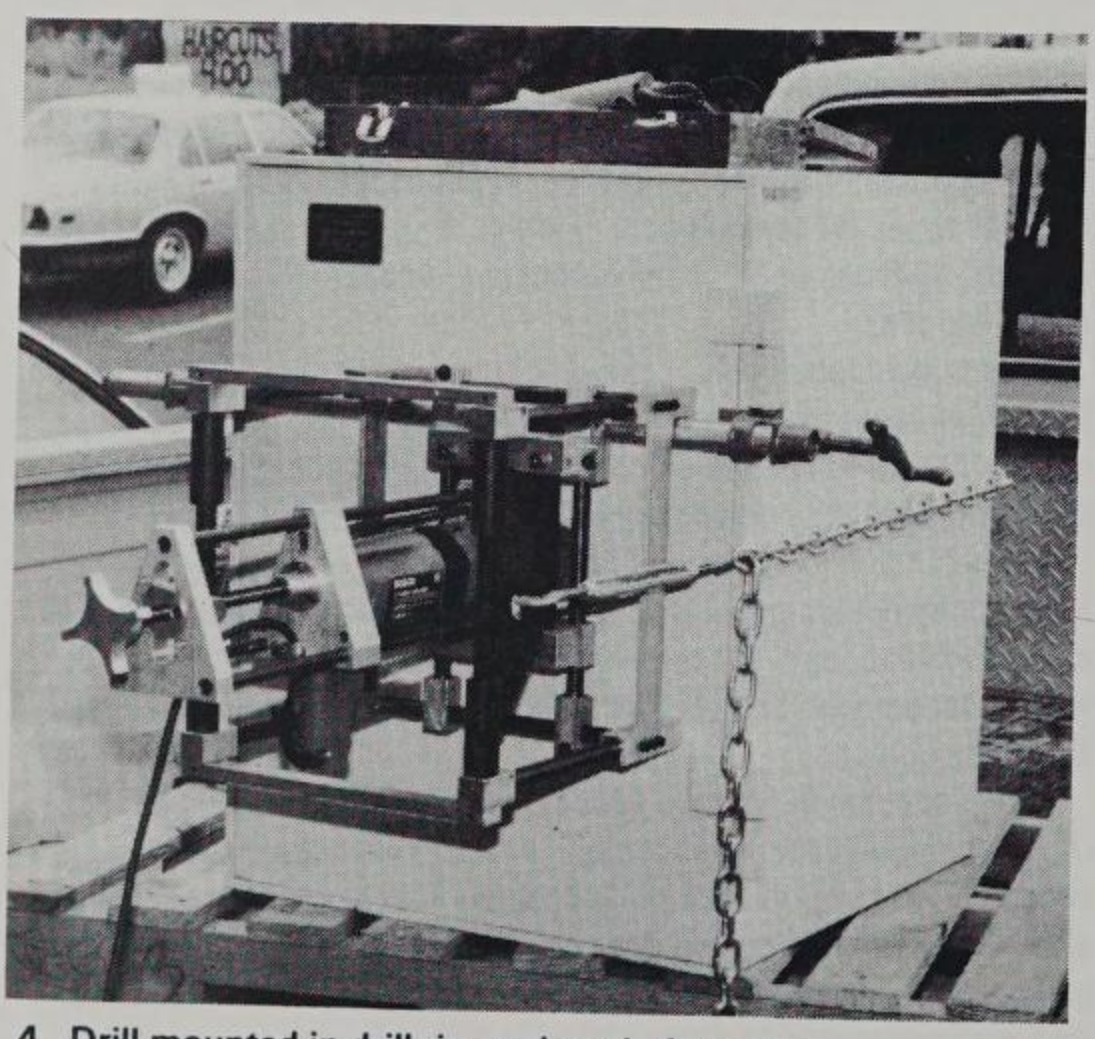
Using the pipe clamps, the pipe is attached to the safe approximately 5″ above the drill point. The base hangs from



3. The Framon DF-1 drill rig attached to the safe.

the pipe as the rig is chained and turnbuckled to the safe. The drill point is double checked, and set-up is almost complete (*see photograph 3*). One feature I really like is that the rig is attached to the safe less the drill motor and feed assembly; good news for an old back like mine.

Next, the drill motor/feed assembly is locked into place, and from here on it's all downhill. This is my favorite part. Once the Framon is in place (set-up is about 5 minutes), you can read a book or guzzle a Coke while you drill—it is a one

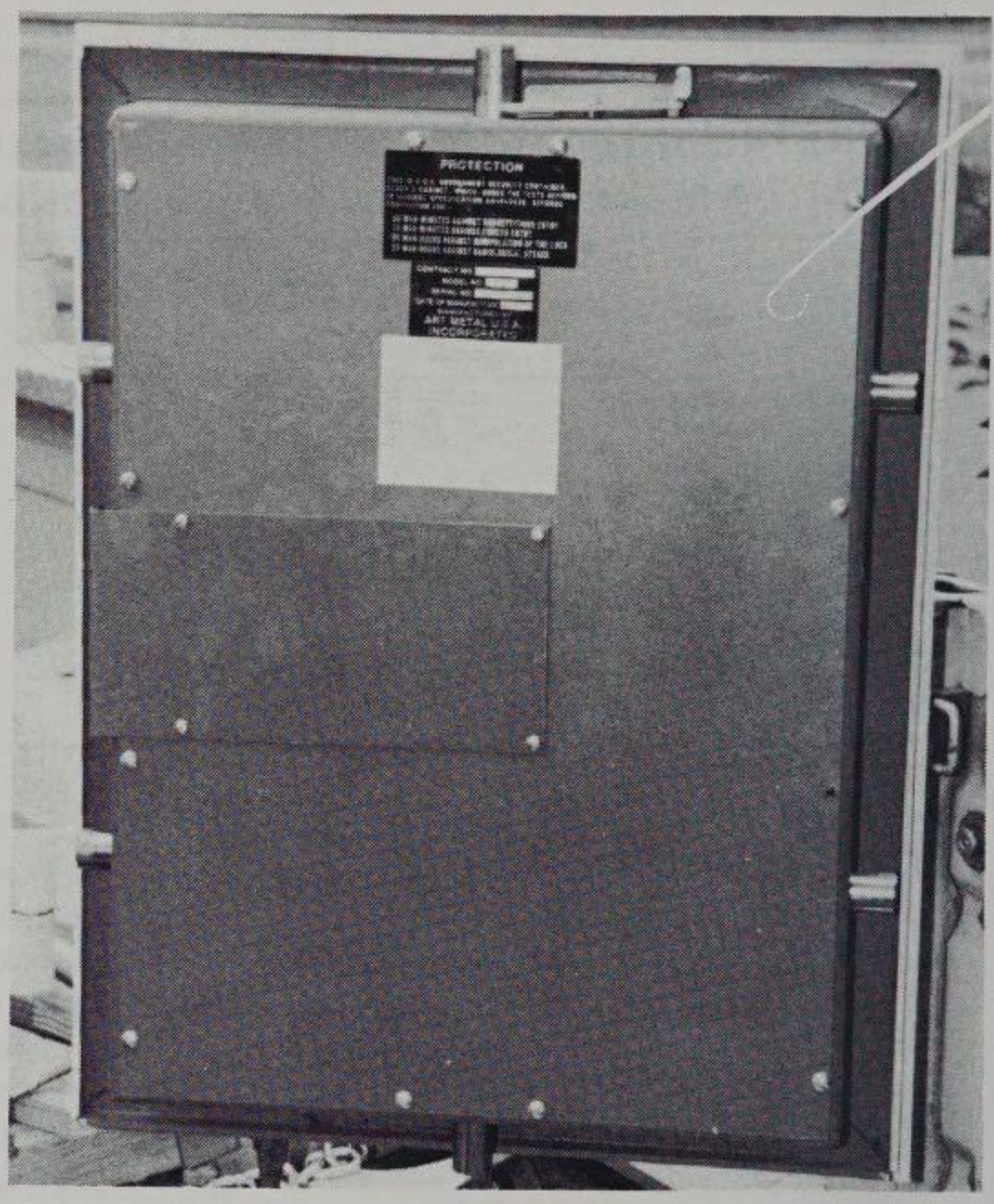


4. Drill mounted in drill rig, and ready for action.

hand operation! The only manual labor involved is turning the feed knob; everything else is either in place or done automatically. (*See photograph 4.*)

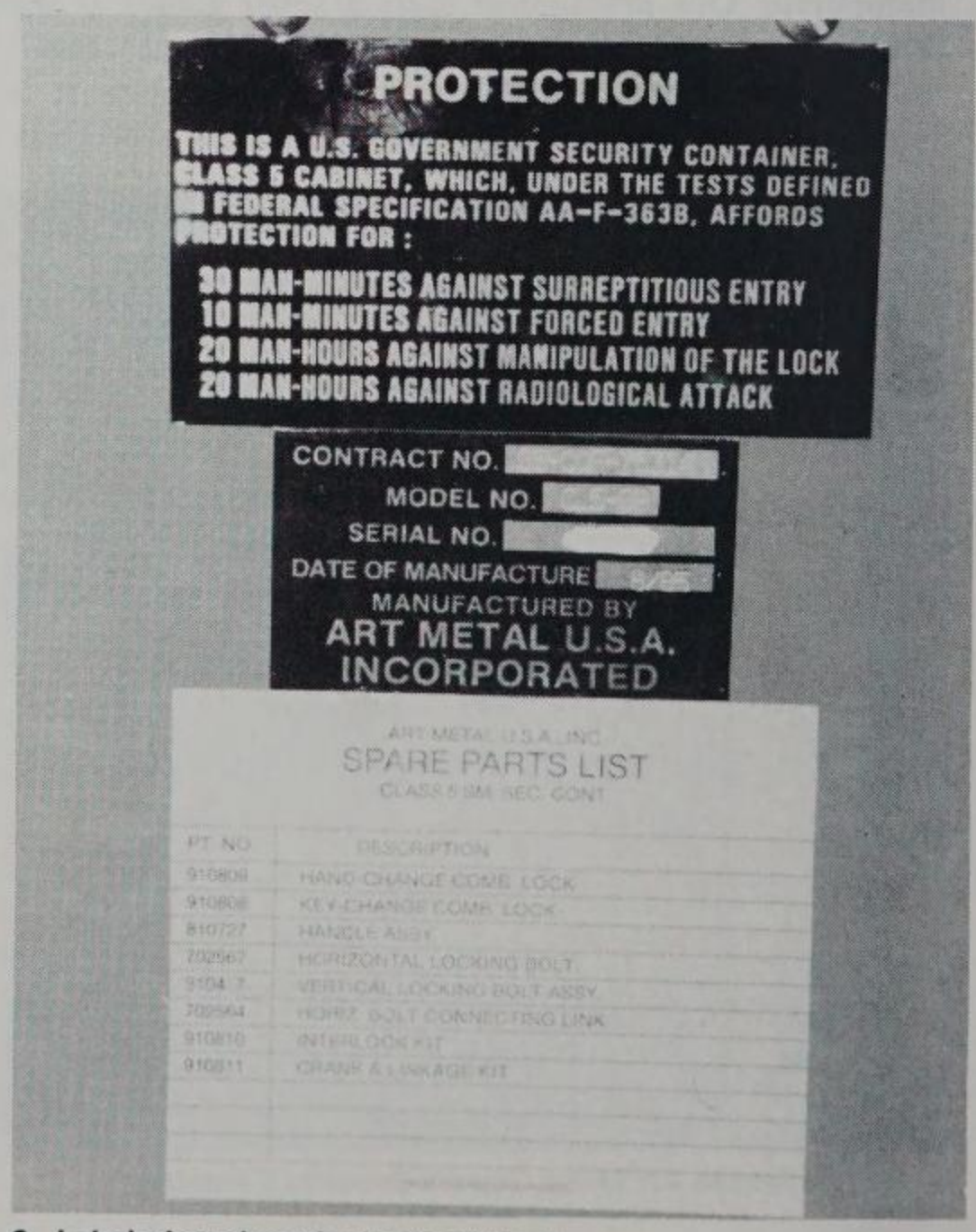
As I gulped down the last of my milk and turned to page 14 of my Spiderman comic book, the drill bit broke through into the lockcase. I must say, this plate was unusually hard to be found in an Art Metal, but stranger things have happened. Looking in the hole with my straight-light, I could see it was perfect—half on the fence, half on the wheels. The gates were lined up, the fence flopped in and the safe was open. Honest Injun, it was that easy, and that hard.

Photograph five shows the inside of the door with the back panel still in place. As you can see, this is a 4-way



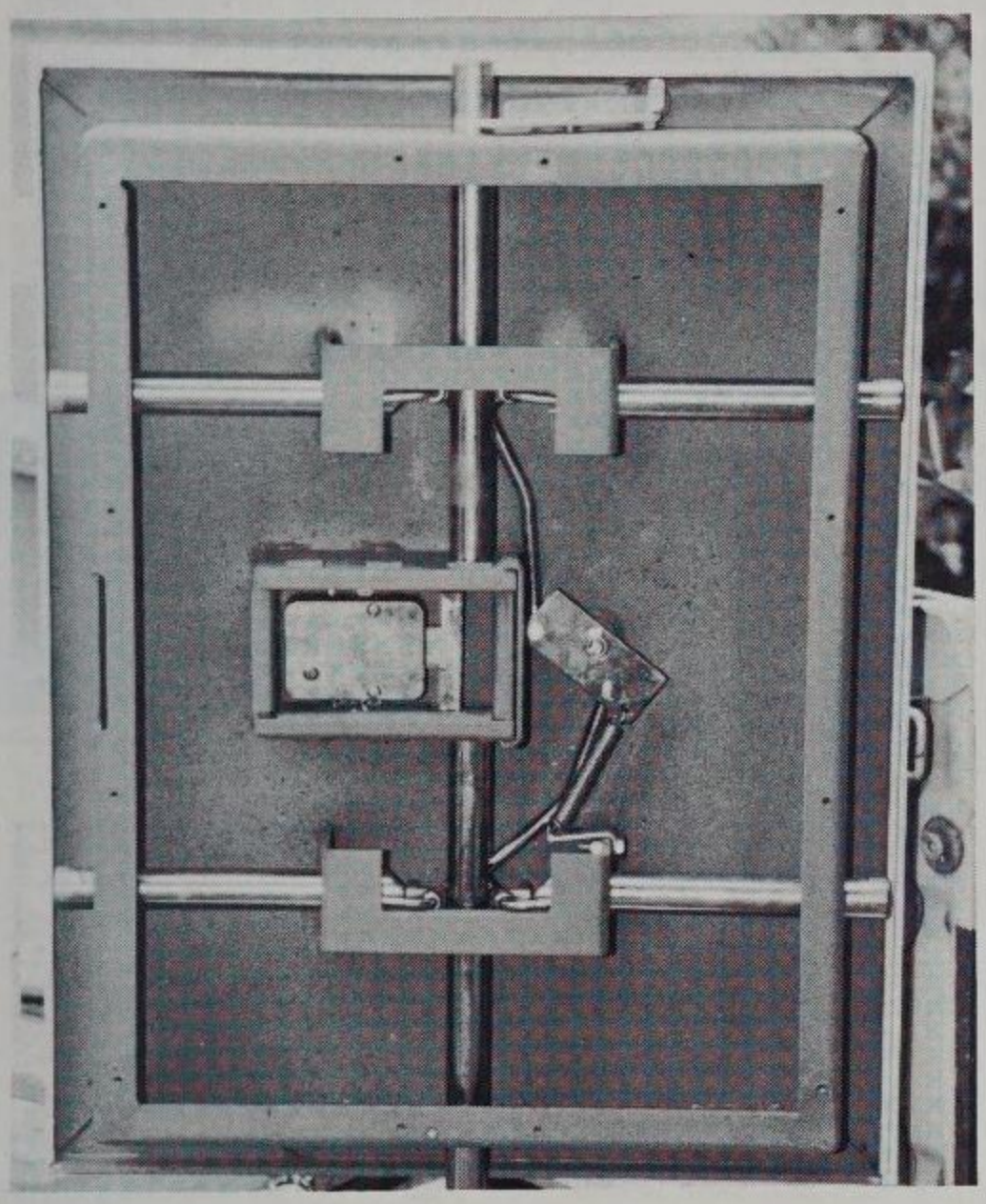
5. Inside of the door (back panel removed), showing the 4-way boltwork.

boltwork, with two locking bolts on each side; one top bolt, and one bottom bolt. Notice the rectangular cover plate in



6. Labels found on the back of the door.

the center of the door. This cover is removed to perform a simple combination change. After it is removed, there is a large piece of hardplate that must be removed by sliding it to the hinge side in order to gain access to the lock.



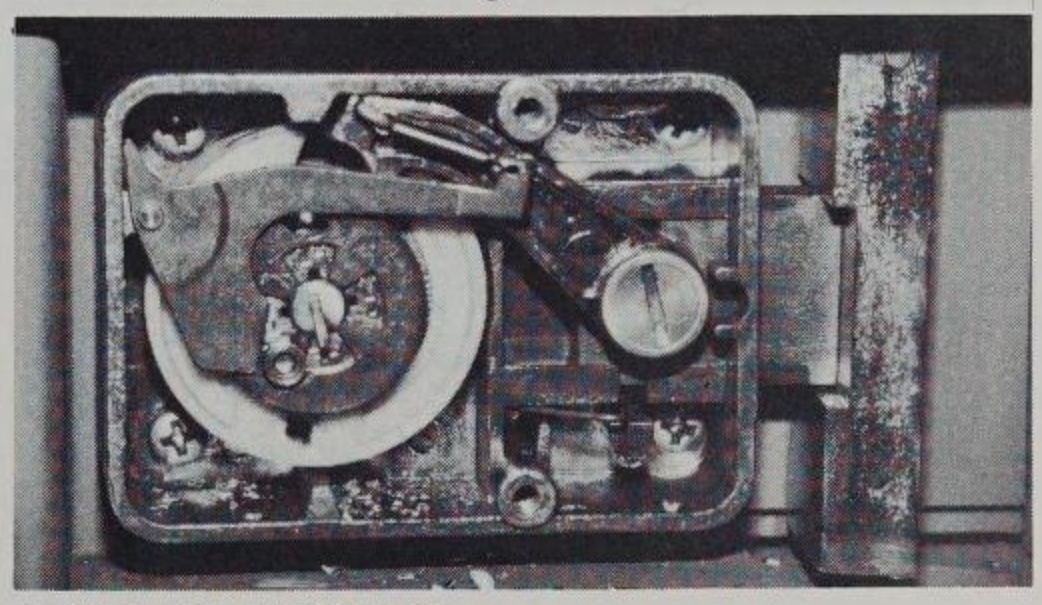
7. Lock and boltwork arrangement visible here with back panel removed.

Photograph six is a close-up of the labels on the back of the door. As you can see on the Protection label, this security container is supposedly good for: 30 man-minutes against surreptitious entry; 10 man-minutes against forced entry; 20 man-hours against manipulation of the lock; 20 man-hours against radiological attack. Hmm...I wonder how Gloria Steinem would react to such blatantly oppressive language?

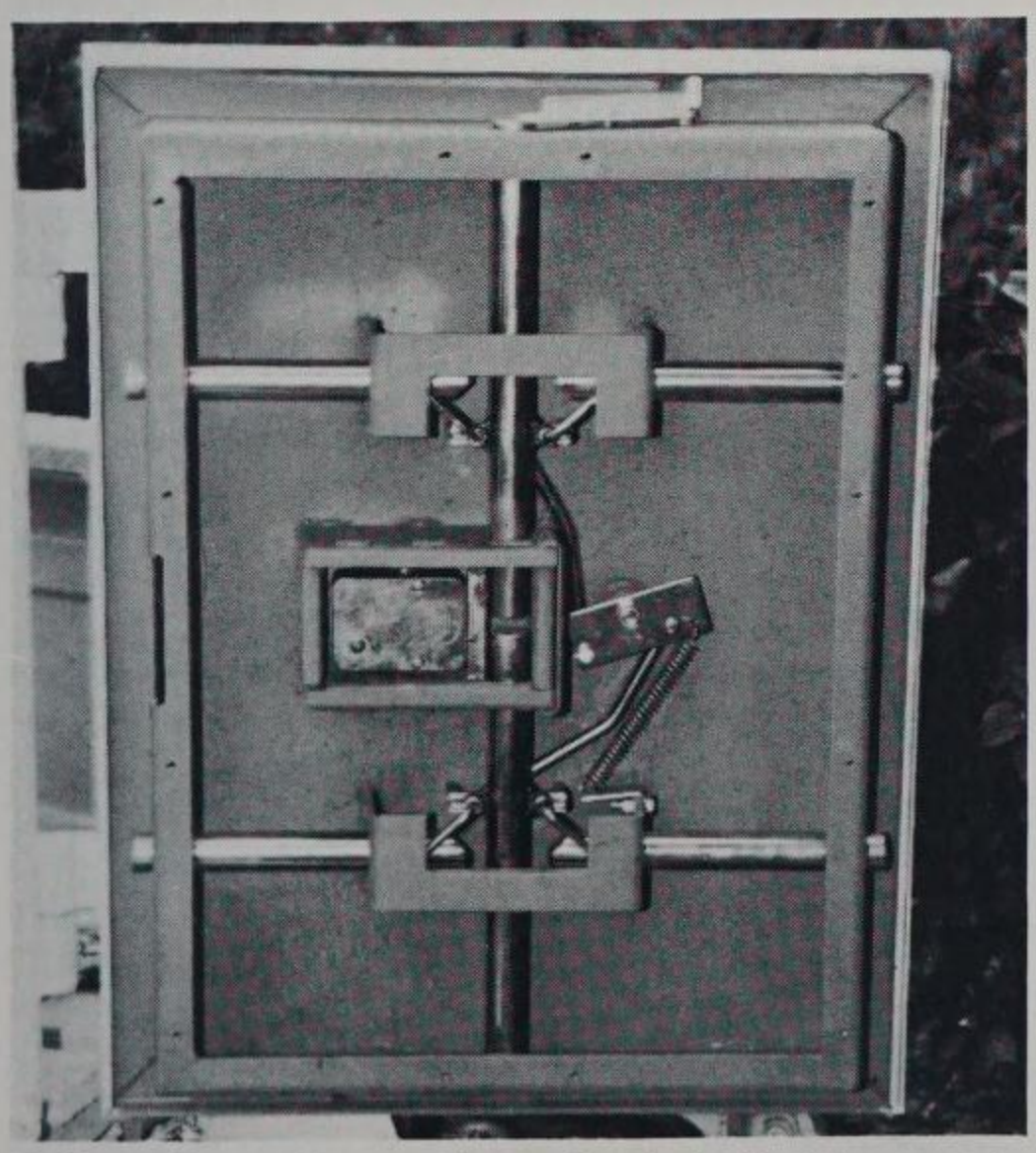
In photograph seven the large black panel has been removed, giving us a birds-eye view of the lock and boltwork arrangement. In this photo the locking bolts are extended, as is the lockbolt. Notice the detent next to the top bolt.

In photograph eight the lockbolt has been retracted, the handle thrown, and the locking bolts likewise retracted. In this position, the detent is blocking the top bolt from being extended, which in turn prevents the rest of the bolts from being thrown and the lockbolt from being extended. Observe the spring attached to the inside handle cam; this exerts constant pressure on the boltwork to throw itself. When the door is closed, the detent will swing away from its guard position over the top bolt, and the spring on the handle will cause the locking bolts to automatically throw into the locked position. The obvious next step in technology will be a lock which will lock itself and scramble the combination automatically.

In photograph nine we have a close-up of the La Gard 1980, which recently suffered the same humiliation as the Mosler MR/MRK 302; more on that in a moment. The RH mounted lock has an aluminum extension block attached to the end of the lockbolt. It is this extension that actually blocks movement of the boltwork. During periodic service it is a good idea to check the attaching screws for tightness. Also be sure and check the lock mounting screws and the lever screw; all should be tight.



9. The La Gard 1980 lock.



8. Same view as photograph seven but the lockbolt is retracted and the handle has been thrown.

As I mentioned, the manipulation-resistant locks manufactured by both La Gard and Mosler have been dethroned by the federal government. Though they retain the Group 1 and 1R labels from U.L., both have lost their approval by Uncle Sam for use on GSA containers. The current CW (Coventional Wisdom) pins the reason for Sam's sudden turnabout squarly on the shoulders of the automatic dialer. The user friendliness of the La Gard and Mosler locks, in not requiring a secondary action to open them, has technically rendered them susceptive to the ministrations of the dreaded dialer.

Although I can understand the reason behind the decision, I don't know how it can be reconciled with the specs on the Protection label we discussed a moment ago. The use of a dialer does not constitute manipulation, or at least not manipulation as understood by us technical guys; though the possibility remains that the bureaucrats who put the words on the Protection label meant something totally different.

In my view, the use of a dialer properly belongs under the rubric of "Surreptitious Entry." And here is the problem as I

see it. The label says 30 man-minutes. Well, to begin with, the dialer is a machine, not a man. And even if we ignore that bit of nonsense, I sincerely doubt the dialer can open either lock in under 30 minutes.

Conclusion? From recent rumors rumbling 'round, I suspect a complete overhaul of the requirements pertaining to GSA containers is forthcoming. And far from bemoaning the advances in technology and the reciprocal responses from industry, I welcome these changes with open arms. It is a simple matter of logic: the better they make them, the harder they are to open; and the harder they are to open, the more it costs...get it? ■

The rumors were right. A couple of years later the Red Label containers and XO-7s took over and forever changed the way we approach government containers.

Fichet Safes

"When Brad took me into the warehouse I was wishing I had a wide angle lens—the place was monstrous! A quick visual once-over tallied over 800 safes on the floor."

by Dave McOmie

European high-security safes. Not since the pin-up girl has a subject so captivated the mind of the safeman. Swapping centerfolds and comparing measurements will never be the same. Instead of a Rita Hayworth and a Marilyn Monroe being exchanged for a hot Jayne Mansfield, these days it's a Fuji-Seiko and a Forestier for a Fichet!

Sit in on any discussion among any group of safemen at any convention. Technical talk of glass plates, remote relockers, barrier materials, and lateral penetrations will dominate the discussion. Why? For the simple reason that these Europeans are daring, dangerous and different. Perhaps variety really is the spice of life!

For the first time in a long time the American safeman is required to exercise his faculties as a rational animal. The old methods can have disastrous consequences when applied to some of the new safes. Believe me, the sound safemen dread most is not the cacophony of rock music, but the shattering of glass. It makes me shudder even as I type the words!

One of the more interesting of the European manufacturers hails from a place I was not able to find on my Rand McNally World Atlas: Velizy Cedex, France. However, I was able to find Atlanta, and during a recent trip to the Peach State I dropped in to see the folks at Fichet-Bauche North America.

The first thing to catch my eye on entering the front door was the Fichet Louis XV 65. Styled to look more like an elegant chiffonier than a safe, the Louis would look right at home on the showroom floor of any upscale home furnishings store. To my eye, this is easily the world's most beautiful safe. And don't dismiss the Louis as just another looker whose beauty is only skin deep, for this is truly a beauty with brawn. Built like the proverbial brick house, the Louis compares favorably with any TL-30 on the market.

At the helm of Fichet North America is the inimitable Philippe Rimbert. President since Fichet's foray into the American marketplace seven years ago, Philippe exudes a style and grace matched only by the Louis he so prominently displays (*see photograph 1*).

The rest of the showroom is just as impressive, and my favorite aisle can be seen in photograph two. Lined up like

1. Fichet president, Philippe Rimbert with the Louis XV 65 safe.

2. An impressive line-up of safes in the Fichet showroom.

fortress guards are two Carats, two TRTL-30X6 Diamond safes, and a TRTL-30X6 Bastille.

If there is one thing that sets Fichet apart from most other high-security safe manufacturers doing business in the Uni-

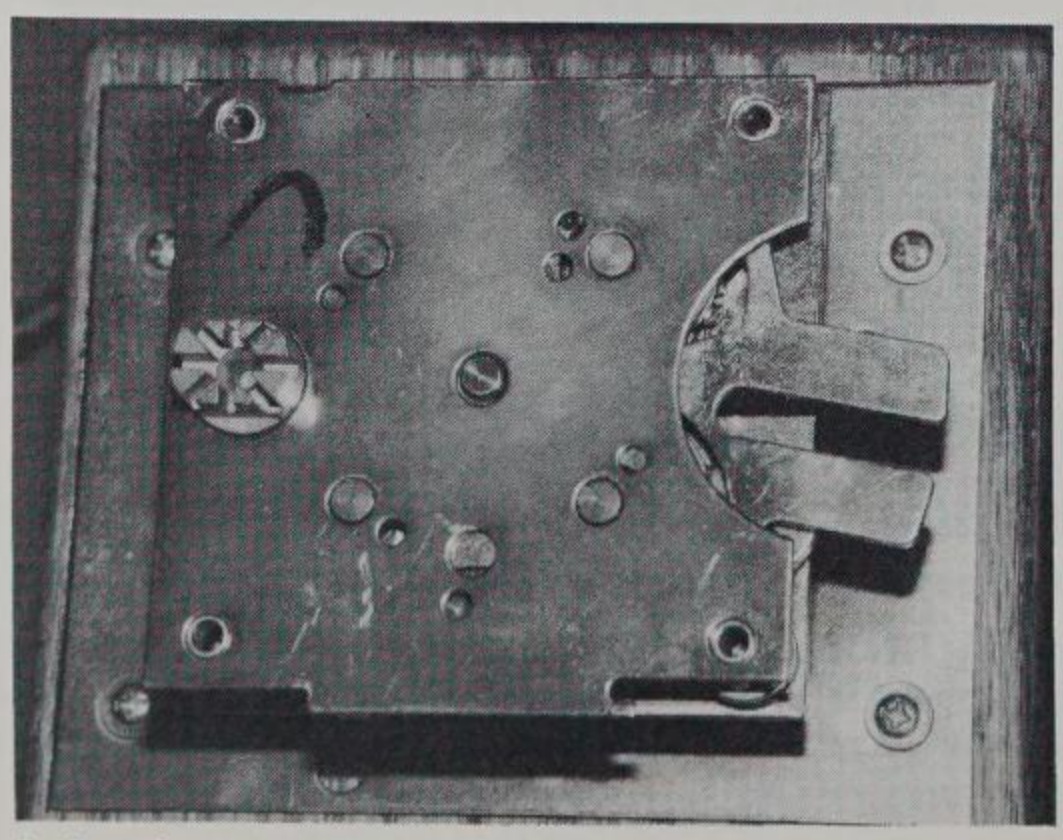
ted States, it rests in having a crew that really knows the nuts and bolts of the product line. Brad Coffman heads the technical team, and having observed Brad's boys in action and picked their brains almost to the point of being a pest, I feel qualified to say that these guys really know their stuff. Technical support from Fichet is as close as your telephone. That, my friends, is worth its weight in gold.

What we nuts and bolts guys find most fascinating about Fichet safes the French-made combination locks and key-locks. And with the locks supporting such provocative names as Monocommande, Monopole, and C2C, what safe and lock buff wouldn't be attracted?

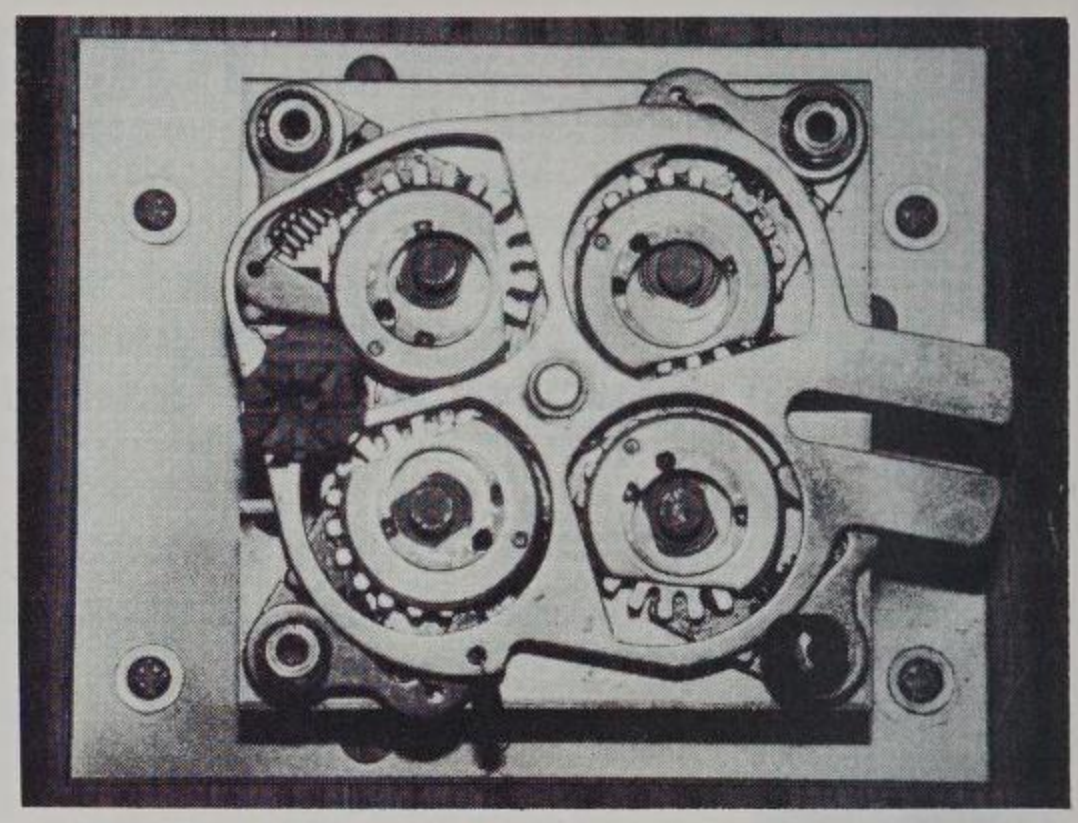
In photograph three, Brad Coffman is kneeling beside a Fichet Valois 150. The C2C combination lock and Monopole keylock are standard equipment on the Valois. Brad was kind enough to give me a quick remedial lesson in French, and I'll pass it on to you: Valois is properly pronounced, val-WAH. Got it? Great! Now be sure and say it right when you call Brad, and you will avoid a long lecture!

3. Brad Coffman, head of the technical team, shown beside the Valois 150.

The C2C is a tricky little lock, as is not yet obvious in photograph four. In photograph five, with the cover plate removed and the lock partially disassembled, you can get the idea. How would you like to have a customer bring in all those parts jumbled up in a plastic bag? Actually, it's not that bad. Like anything else, take it a part a few times, play with it, and you will have it down pat.



4. A surface view of the C2C lock.



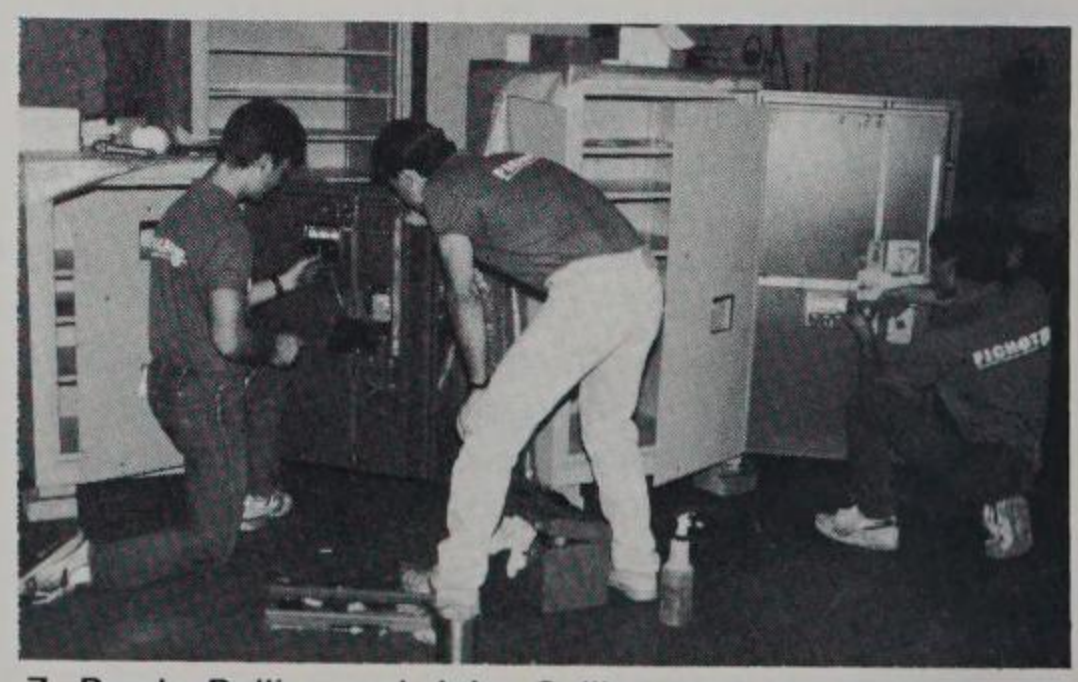
5. The C2C lock with the cover plate removed.

When Brad took me in the warehouse, I found myself wishing I had packed my wide-angle lens—the place was monstrous! In photograph six you can see what amounts to the right half of the warehouse. A quick visual once-over tallied in excess of 800 new safes—not a bad inventory!

After lunch, I had the opportunity to observe a couple of professional timelock installations. In photograph seven Brad supervises while Randy Rolling and John Collins put the finishing touches on their installations; Randy operates on a Biltmore, John on a Biltmore Plus.

As the day was winding down, Brad and I were in his office discussing the finer points of Fichet safes when I blurted out something that embarrased us both. I'm almost too embarrased to repeat it now, but I've been told it is good

6. A portion of the Fichet warehouse is shown here.



7. Randy Rolling and John Collins work on Biltmore safe installations.

for the soul, so here goes: On Brad's desk I noticed what appeared to be a postcard of a gorgeous blonde pin-up girl, you know, the kind that we usually think of as an artist's rendition, not actually existing in reality. So, being somewhat of a wishful thinker myself, I remarked on her remarkable physical endowments, and said to Brad, didn't he wish she were his girlfriend. As Brad's face blushed, I knew I had really blown it, and felt my own countenance go crimson. I knew what he was going to say before he said it: "Uh, Dave, uh, that, uh, that is my girlfriend." Gawrsh Dave, wide open and insert clown-size clodhopper! Oh well, you can't blame a guy for speaking his mind...can you?

In closing, I would like to thank Philippe, Brad, and the rest of the crew for taking the time to give me the king's tour of Fichet, and for treating me to a royal lunch. As for Brad, I'm still not sure whether to apologize or congratulate him!

For more information on Fichet equipment, call (404) 448-5593, or write: 1255-A Oakbrook Drive; Norcross, GA 30093. ■

Fichet is history. Following Lord, Tann, and Kaso, Fichet pulled out of the United States. But there are a zillion of their safes out there that we will be working on for at least another generation.

Manipulating A Schwab Vault

"Well, I twaddled and twiddled, watched and wiggled, even stifled a giggle, as I felt the fence fall in barely twelve minutes later. I could hear the applause."

by Dave McOmie

It seems that a few of you dial-twiddlers with a sharp eye for spotting contradictions have apparently caught me in a big one. After consulting my editor, I have decided to face it publicly rather than plead the Fifth.

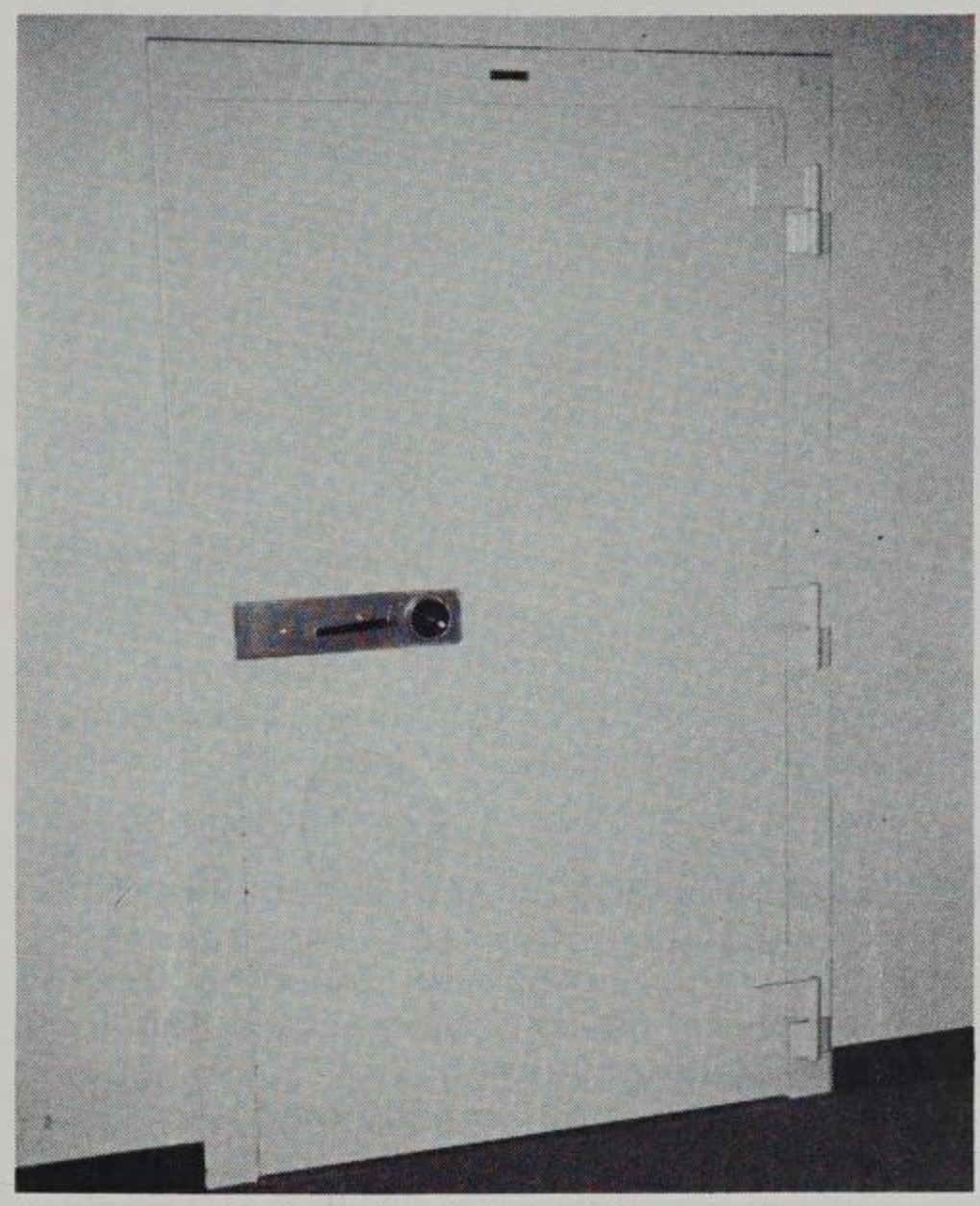
If you recall, in the October issue I referred to manipulation as an interesting hobby, the perceived implication being that manipulation was an activity I certainly would not waste my time on. It may be little consolation to those who took me literally and felt insulted, but the truth is that I was engaging in a little tongue in cheek journalism. Be that as it may, October's comments clearly clash with the observations of my good friend, Skip Eckert, who has reported elsewhere that he and I have had hard-headed series speed competitions on his kitchen table, manipulating for hours on end.

Yes, this is all true. I do enjoy manipulation for its own sake, and certainly do not condemn others who may even enjoy it more than I, but that does not change my mind about the distinction between manipulation as a work-tool and manipulation as a hobby. The activity Skip and I engage in around his kitchen table is a hobby, just as our playing the guitar in his den is a hobby. However, manipulating a safe open on the job in a reasonable amount of time is another thing.

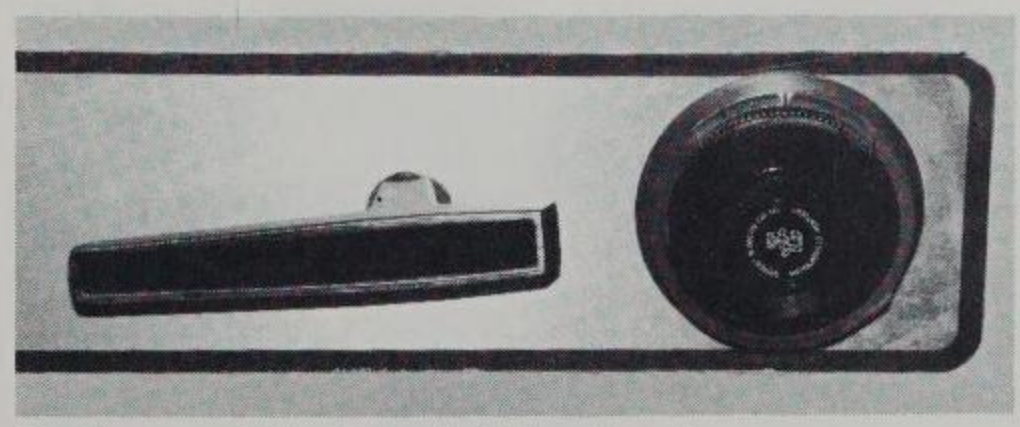
On the other hand, to spend 10 hours manipulating a safe that can be drilled open in 10 minutes is clearly engaging in manipulation for its own sake—in other words, as a hobby. Now don't misunderstand me; to say something is a hobby is not to denigrate the activity, but merely to define the activity. Fair enough? I hope this clears up the confusion generated by my admittedly ill-chosen use of the unflowery, but figurative phrase.

Now, onward and upward. This month we are going to look at a vault door I opened by, you guessed it—manipulation! The call came from Davis Lock and Safe, sending me out to a vacant office complex. The new owners wanted the vault door opened before they moved in. They escorted me to the door and immediately bid me farewell, asking only that I lock up upon leaving.

This was great. No one would be peering over my shoulder. There would be no distraught manager pacing the floor, constantly asking "How much longer?" There would



1. Locked vault door that challenged Dave.

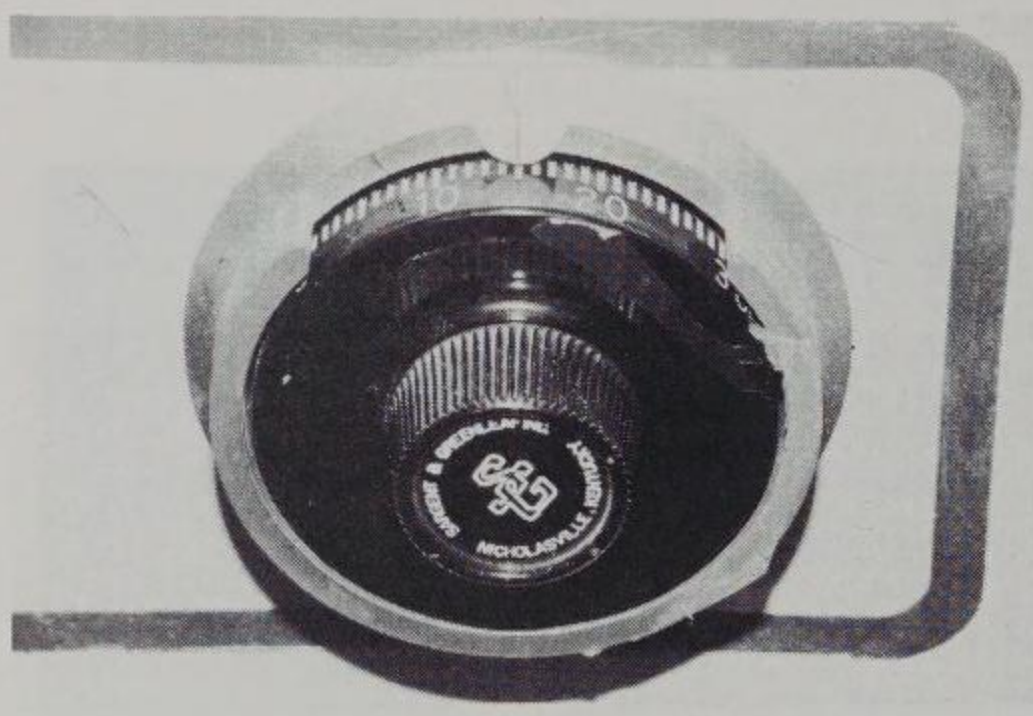


2. Close-up of the Schwab dial and handle.

be no wiseguy remarks about using nitro or dynamite; no appeals to the magic of television; no suggestion to secure the services of a "real safecracker" from the state penitentiary. But then I realized: nor would there be an audience to appreciate my tour de force! Even though the circumstances were ideal for manipulation, and although I was quite enjoying the change of pace of peace and quiet, I began to wonder what kind of performance Olivier might have delivered to an empty theater. I approached the vault door shown in photograph one, and soon found myself at cruising speed in that benign yet monotonous mode we call autopilot.

A close look at the dial and handle shown in photograph two unmistakably identifies the vault door as a Schwab. This handle is unique to Schwab. Another of their trademarks has been to use a chrome dial ring with a black dial.

I am often asked if I use any manipulation aids. The answer is yes. The one I use almost all the time is also one of the most inexpensive items ever made available to the locksmith: the hairline opening index sold by Lockmasters at a whopping price of $1.75 for a card of 24. In photograph three a hairline opening index has been put over the regular opening index on the S & G spyproof dial ring.



3. The spyproof dial ring with a hairline opening index attached.

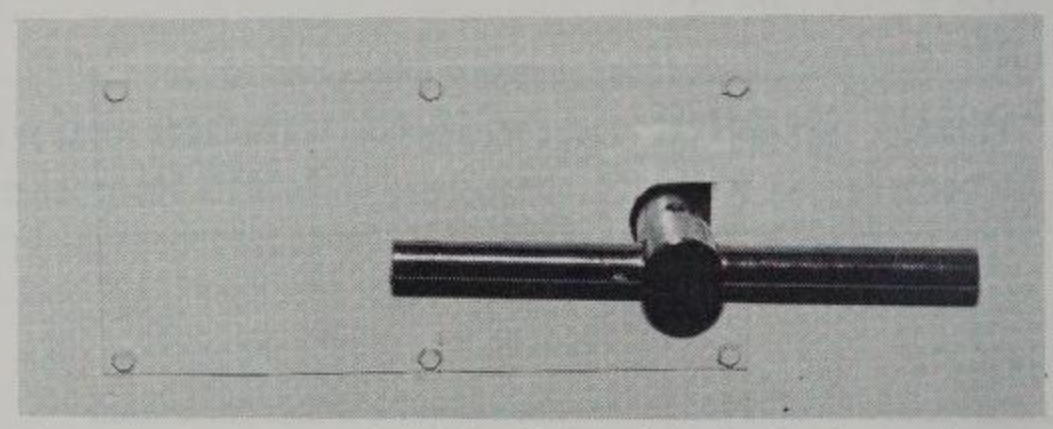
You know, it just dawned on me why I don't write on manipulation—it is so darned boring! The difference between drilling and manipulation is the same as that between a prize fight and a chess match. One is full of action and lends itself well to blow by blow commentary; the other, though intellectually stimulating for the participants, is extemely boring to watch and somewhat difficult to read about. At least that is how I see it. However, I could be wrong; it there are a number of readers who would enjoy reading "As The Dial Turns" accounts of successful manipulations, then by all means write me and set me straight.

Well, I twaddled and twiddled, watched and wiggled, even stifled a giggle, as I felt the fence fall in barely 12 minutes later. This is not world record time, nor is it even close, but is the fastest on-the-job opening I can recall in years. The door was pulled open to muted applause from my friends whose presence was palpable, at least in spirit if not in the flesh.

On the back panel can be seen the three labels shown in photograph four. At the top is the obsolete SMNA label designating it a 4 hour fire-resistive vault door. Below it is the U.L. label verifying the presence of a factory installed relocking device. At the bottom is the manufacturer's label. I should add that the U.L. 4-hour fire label was installed on the outside at the top of the frame.

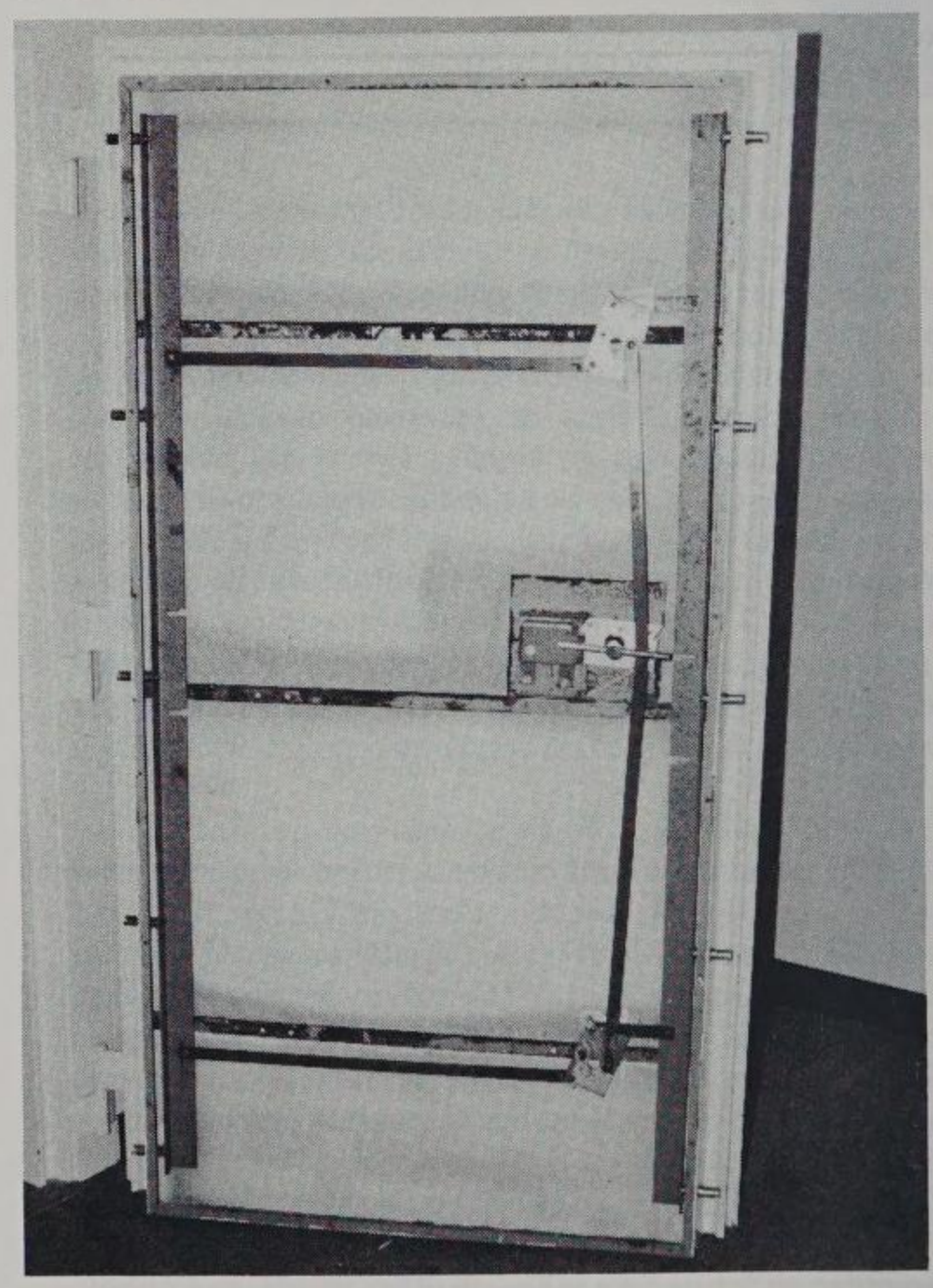
4. The three labels found on the back panel.

In photograph five we have the emergency release handle on the inside of the door. Faded instructions on the door direct us to push in and turn the handle counterclockwise to unlock the door.

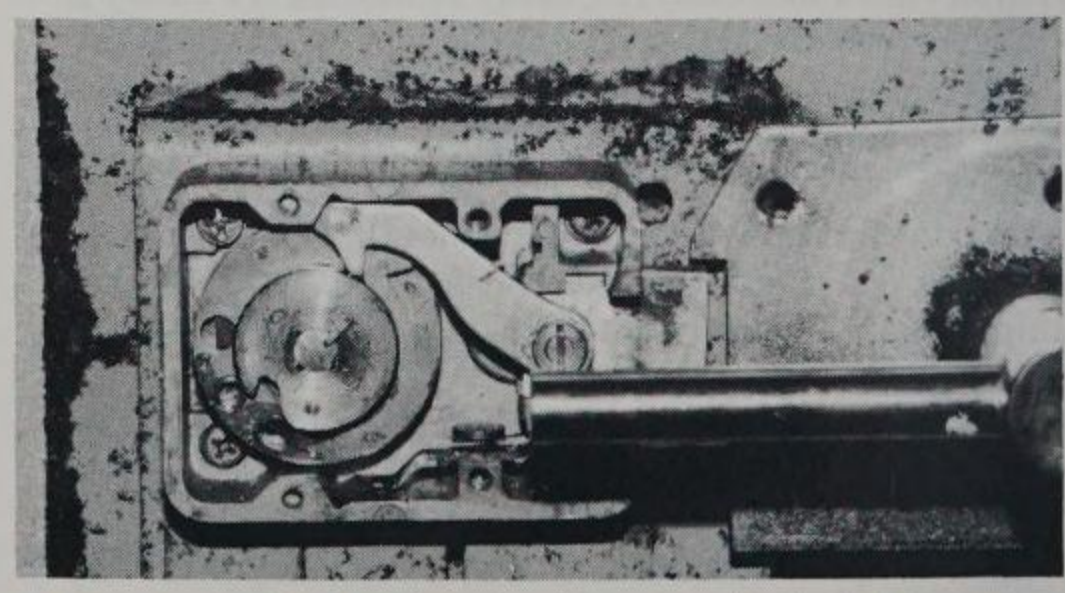


5. The emergency release hand found on the back panel.

With the back panel removed, as in photograph six, we can see the entire boltwork in the locked position. Notice there are locking bolts on both the opening and hinge sides of the door.



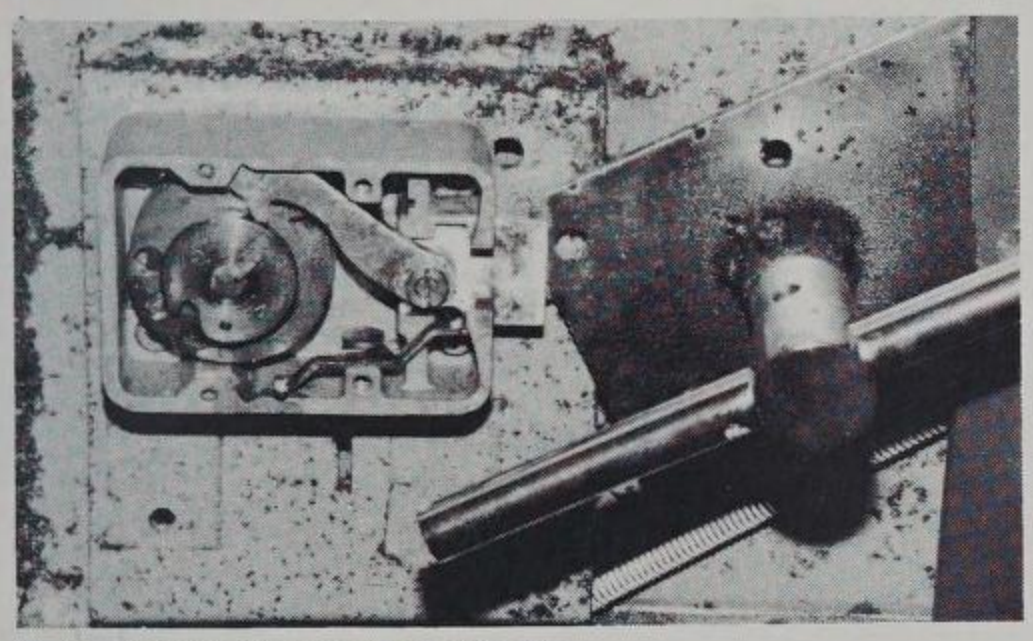
6. Door shown with back panel removed.



7. Close-up of lock without back cover and relock detent.

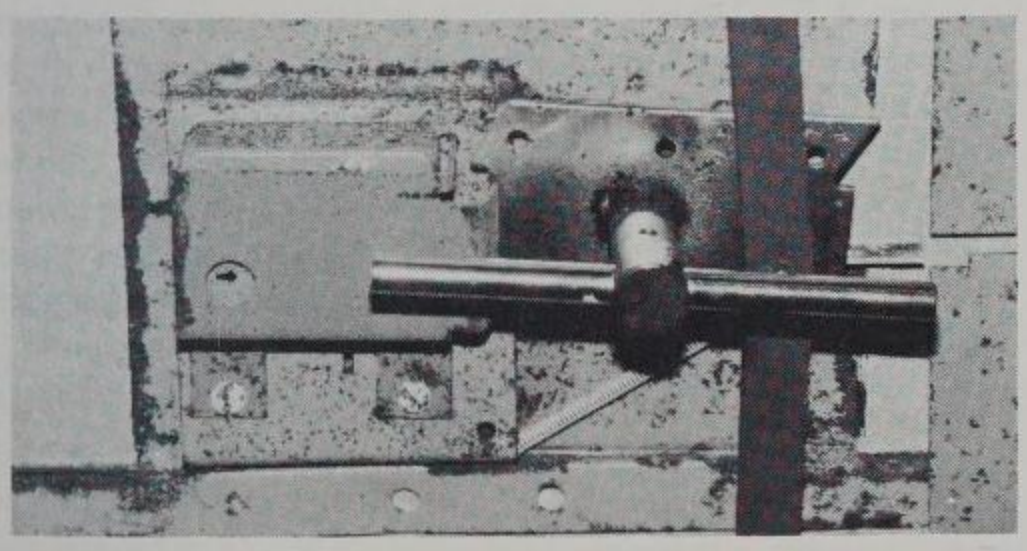
In photograph seven we have a close-up of the lock with the back cover and relock detent removed. You can clearly see how the lockbolt blocks the handle cam.

In photograph eight we have pushed the handle in, allowing the handle cam to bypass the lockbolt, and turned the handle counterclockwise, retracting the boltwork. As with most fire resistive vault doors, the escape device suggests an alternative method of entry. It is conceivable that you could drill for the cam to hook and pull in on it while turning the handle, though the spring pressure is so great that you would probably need a tool built like a nose puller to do the job.



8. Lock with the handle pushed in.

To give a grasp of how this crazy relocker works, we had to do some reassembling. As you can see in photograph nine, the back cover and relock detent are in place. Notice the hole in the lock mounting plate, just to the left of the lock. Going into this hole is the metal arm of the relock detent. Also, take

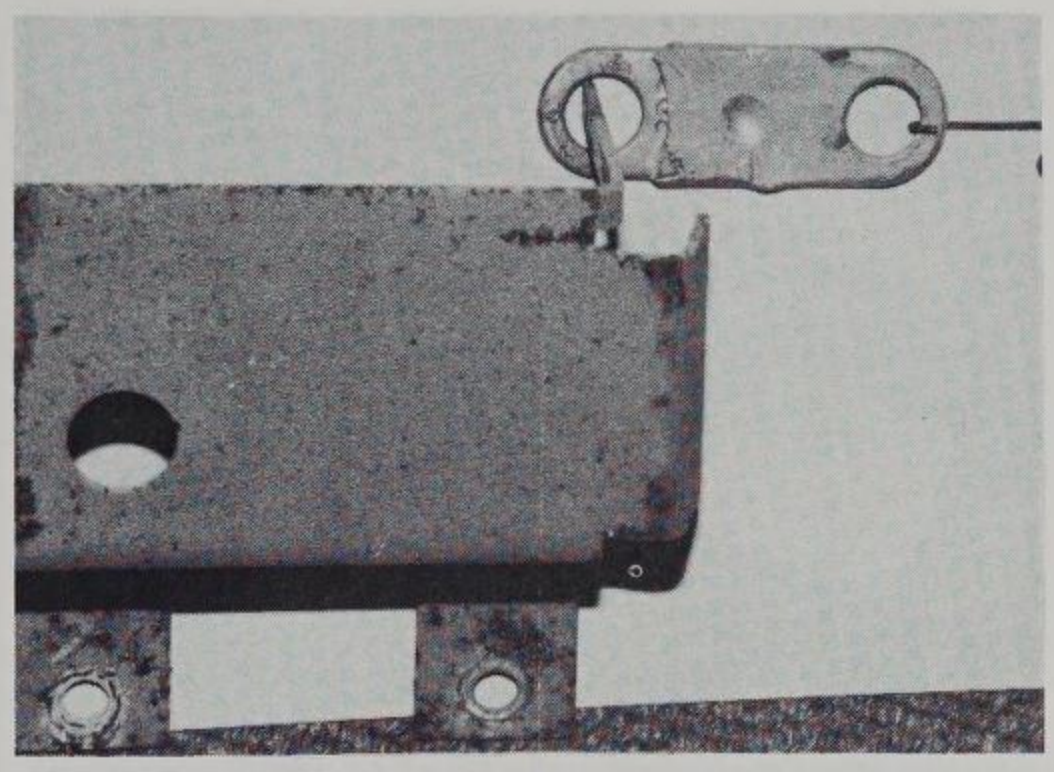


9. Lock with back cover and relock detent in place.

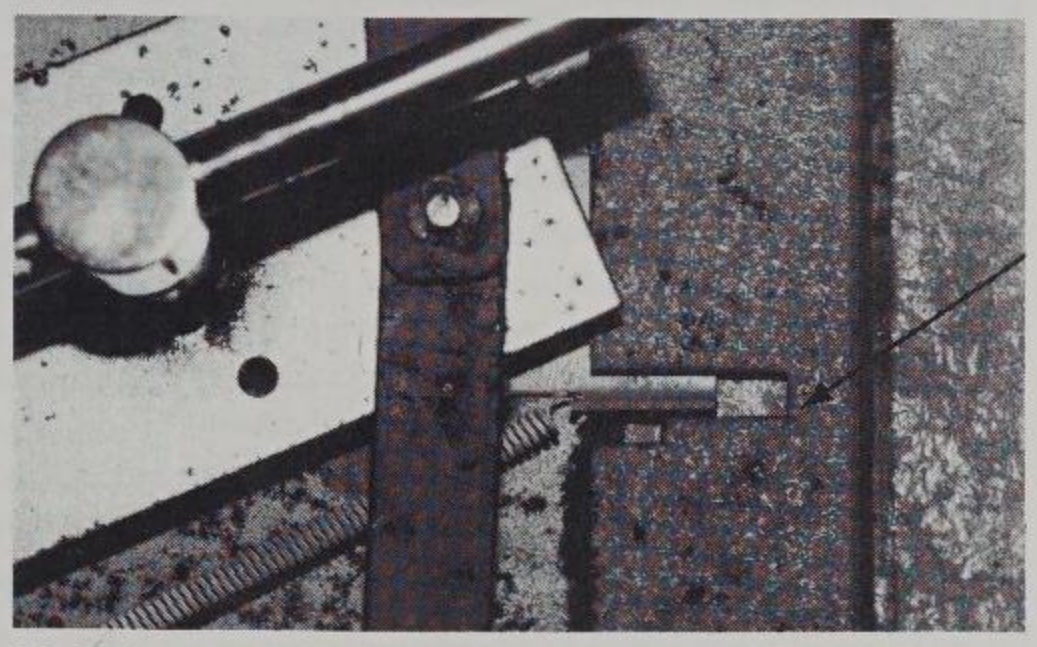
note of the spring just below the center of the handle. This spring keeps constant downward pressure on the relocker, which can be seen just above the extreme right of side of the handle.

In photograph 10, I have removed three of the five components that do relocking duty. The big piece on the left is the relock detent, which normally sits right behind the lock. The arm off the relock detent engages the thermal link in the middle of the photograph. Attached to the right side of the thermal link is a small wire. It is this wire that actually connects with the relocking device. Unfortunately, all these connections take place under a steel plate, and are invisible to the eye.

In photograph 11, the relocking device is in the normal position, held in check by the relock detent. In this photo the boltwork has been retracted. As you can see, the relocking device is lined up with a slot in the boltbar (see arrow). Notice the spring attached to the relocking device.

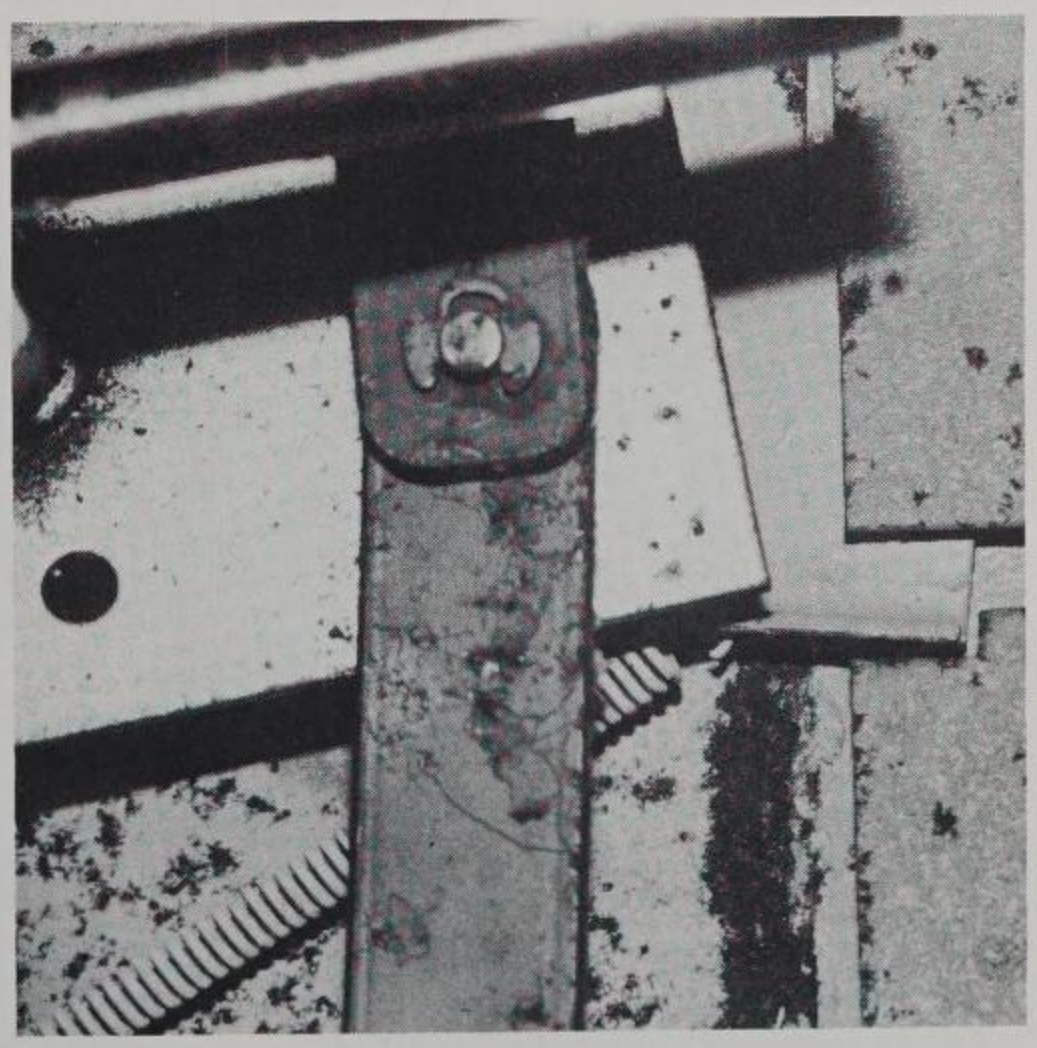


10. Relock detent (left), thermal link (center).

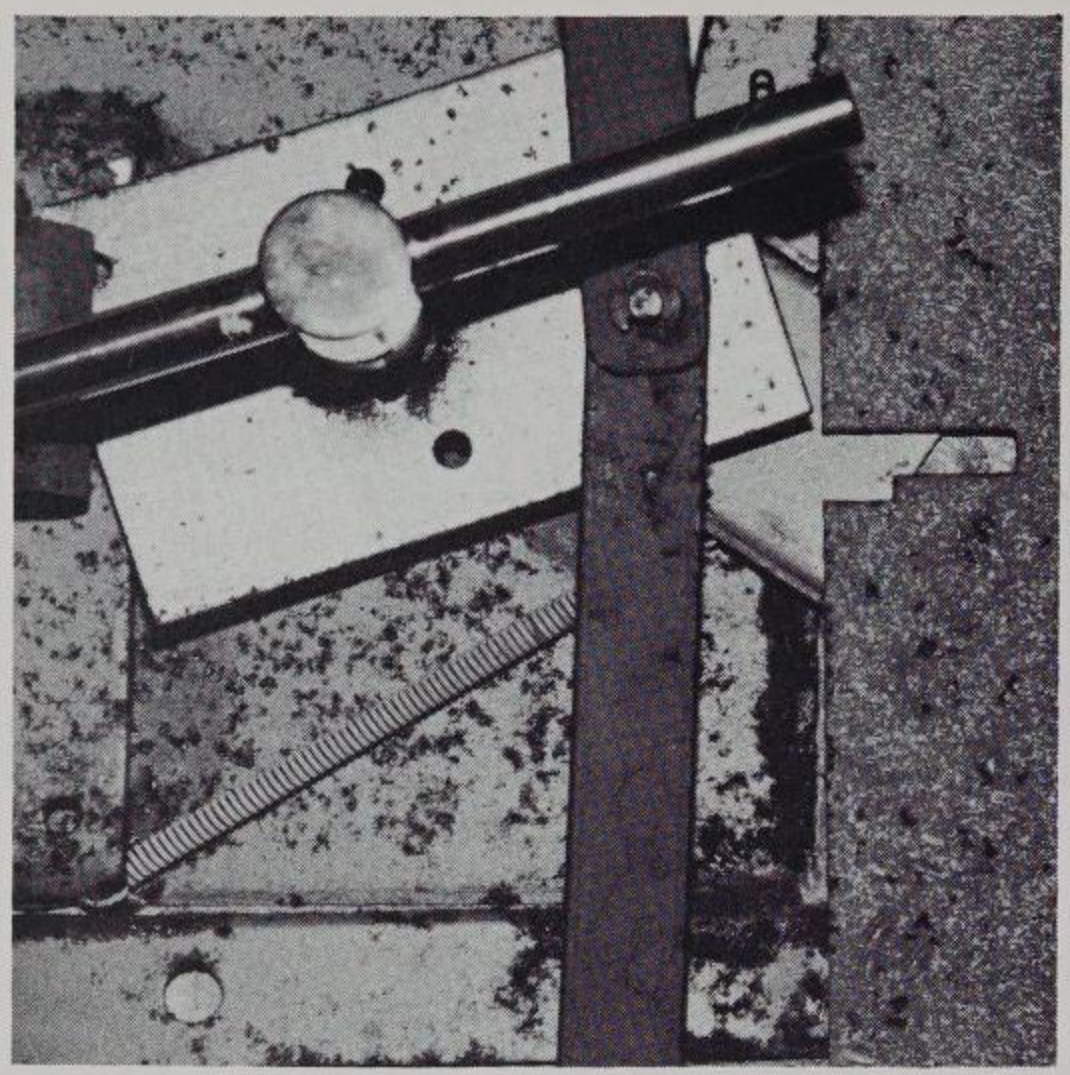


11. Relocking device in normal position; note how this device lines up with the slot in the bolt/bar.

Photograph 12 shows the relocking device in the position I think it is supposed to be in when it is activated. It drops down into the lower stairstep of the slot in the boltbar, effectively preventing the boltwork from retracting.



12. Relocking device, positioned for activation.



13. Activated relocking device.

However, the relocking device in this particular door did not partially engage the boltbar. So when it was activated, the spring simply pulled the relocker down as far as it could go. But as you can see in photograph 13, it is still effective in preventing the boltwork from retracting.

Well, that's about all I can think of to say about the Schwab vault door this month. The next time I have one to open, I think I will base my opening technique on a simple criterion: If I am alone, then manipulation is most desirable; but if there is an audience, the demand for a performance will be so great as to dictate drilling—it gives 'em a better show! ■

I haven't worked on a Schwab fire-resistive vault door since. But I have delivered many a performance since to an empty theatre, and I have come to like it. A lawt.

A Diebold Lockout

"I must confess I love my deadblow hammer. The frustrations of a bad day come out, all under the guise of professionalism. Bam, Bam, Bam!"

by Dave McOmie

Just when I start to think I've seen it all, something will pop up and prove me wrong. A recent lockout on the Diebold lug door shown in photograph one did exactly that. Here were the symptoms: The customer had the combination, but the safe would not open. I could not detect any contact points, nor could I detect any wheel pick-up, not even with an amplifier; and the dial was a tad stiff. Rarely do both these symptoms occur simultaneously. No discernible contact points often indicates a broken drive-pin. But both at the same time? I sincerely doubt it. The stiffness of the dial concerned me, but I couldn't seem to free it up. So I did what most of us do when in doubt: I reached into my little black bag and pulled out the deadblow hammer.

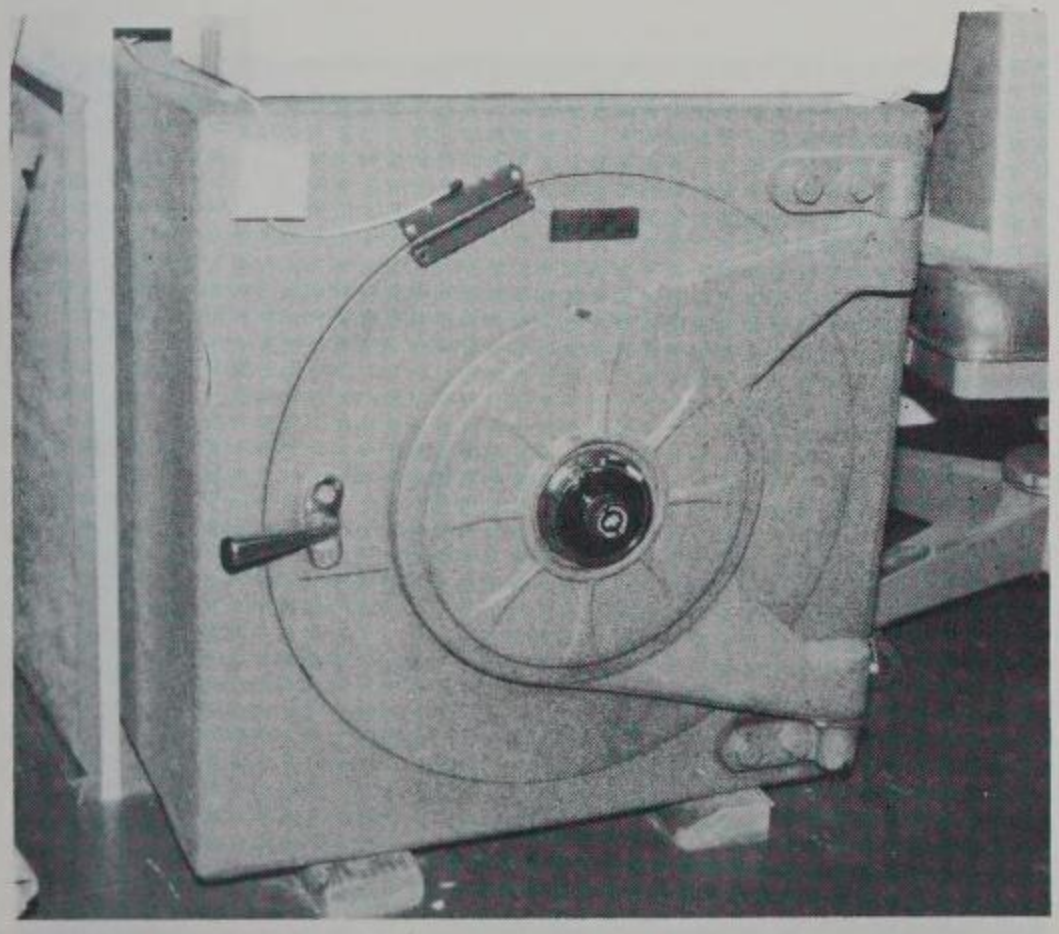
I must confess, I love my deadblow hammer. The frustrations of a bad day come out, all under the guise of professionalism! BAM! BAM! BAM-BAM! BAM-BAM-BAM!!!! Gosh, that felt good, but unfortunately it didn't seem to be accomplishing anything.

After enough swings to fall a cherry tree (I cannot tell a lie), still there were no contacts, and still the safe was locked. I began to suspect this was going to be a tough job, requiring the dreaded P-word: Penetration. In all fairness to the safe, I fiddled around for about 90 more seconds before making the decision John Wayne would have made, and pulled out my drill.

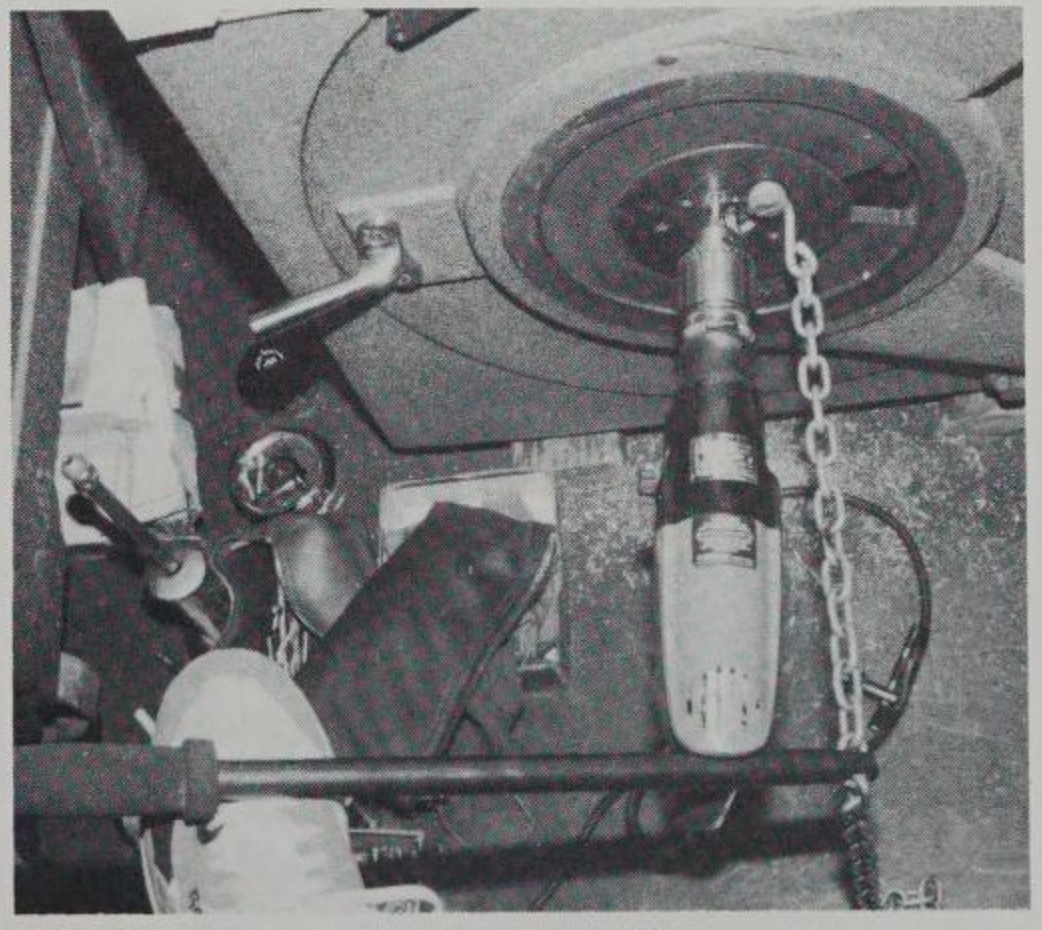
The first thing to do before you start drilling away on a Diebold lug door is to determine whether it is a single-bolt or tri-bolt door. If the lock is a Group 1, identification is easy. The Diebold 180-55, used only in the tribolt doors, makes an audible clicking sound around zero as you turn the dial. The Group 1 Diebold locks used in the single-bolt doors all push in at zero.

If the lock is a Group 2, then it gets a little more complicated. The predecessor to the 180-55 was the 177-55. The 177-55 is not manipulation resistant, nor does it have the characteristic click of the 180-55. Distinguishing a 177-55 rotary lock, which was used in the tri-bolt doors, from the Group 2 locks used in the single bolt door can be difficult. My guess is that we can probably get a hint from the contact points, but since my safe was exhibiting no contacts, this technique was of no avail.

But look back at photograph one and you will see the



1. Diebold lug door safe.



2. Black Bart, mounted and ready to drill.

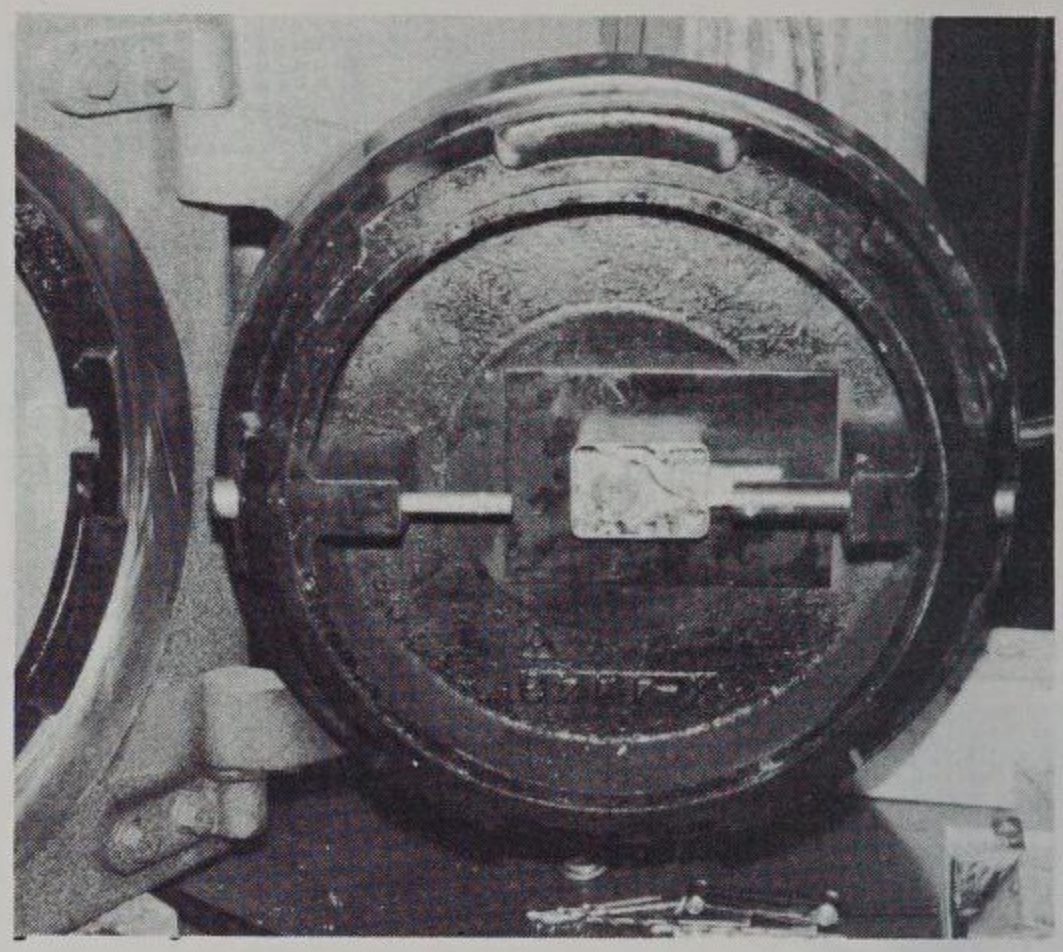
tipoff. Notice the ridges on the bearing plate. This tells you without a doubt that the door is a single bolt door, with either a Diebold 900, a Diebold 177-23 (which differs radically from the 177-55), or a Sargent & Greenleaf R6730 on the inside.

The S & G dial told me it was likely to have an R6730 on the inside, so I proceeded on that somewhat educated guess. After pulling the dial and removing the bearing plate, I attached my chain to the safe by making use of one of the bearing plate screw-holes and a washer. (Tip: do not pry the hinge away from the door on a Diebold, it accomplishes nothing and makes reassembly a real pain.) After drilling down to the hard-plate, I chucked up a Strong Arm bit, and leaned Black Bart into my Bosch Hornet (*see photograph two*). To clarify this photograph, I should point out that I am not actually drilling. This was a posed photo. I am standing on my right foot, my left foot is propping Bart up, and my hands are struggling to snap the picture before Klutzo loses his balance!

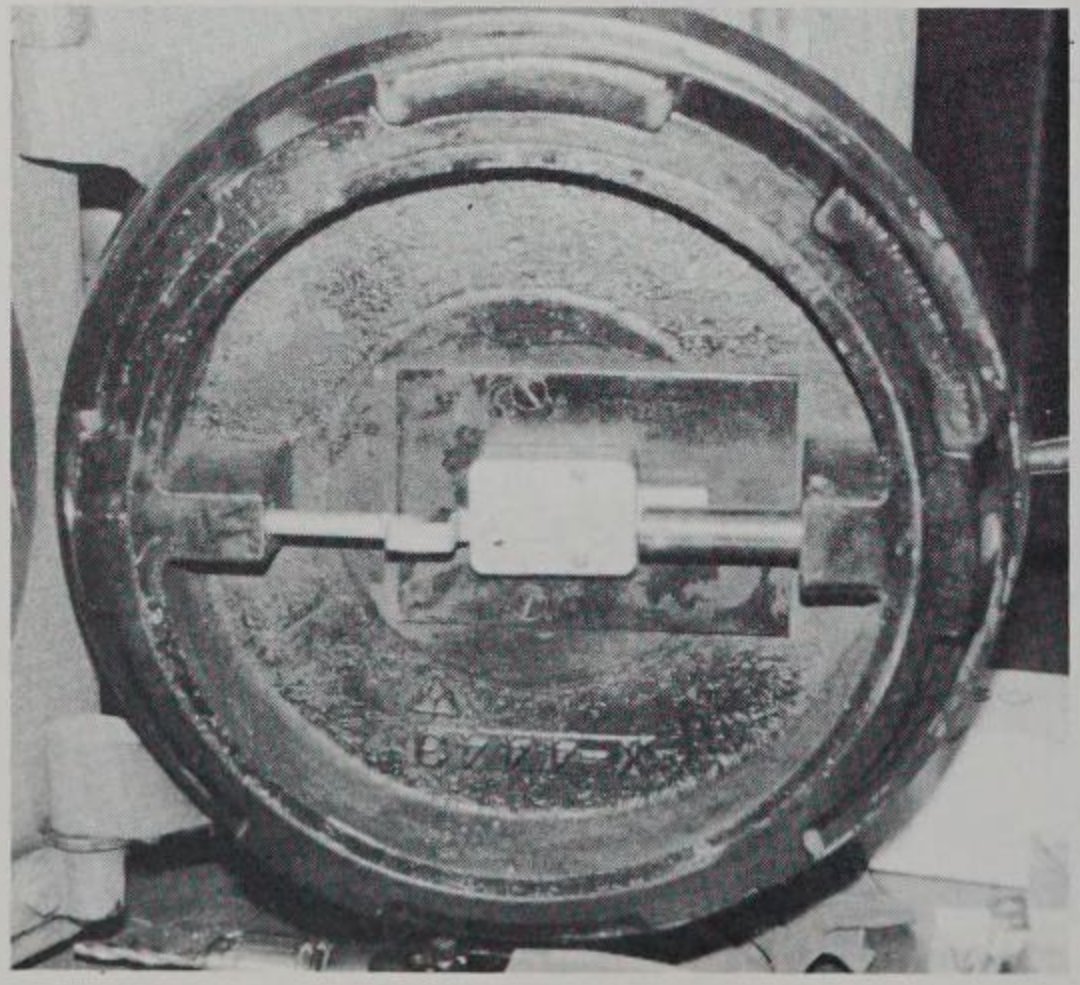
With the posing out of the way, I leaned into Bart with my left hand and the Strong Arm broke into the lockcase. Peering in the hole, I expected to see the fence—after all, I am quite used to being "right on the money" better than 99% of the time (OK, so it's only 98%). Well, I was more than just a little surprised not to see a fence staring back at me. Had I misidentified the door? Had I marked the drill point wrong? Double checking these things led me to conclude that no mistake had been made. (Whew! For a moment I thought I might be slipping!)

Next I decided to have a look around. This is where a mini-scope is worth its weight in platinum. When you have drilled a ¼" hole right at the drop-in area, with the wheels covering half the hole, a normal size scope simply will not fit in between the wheels and the edge of the hole. But a mini-scope with a diameter of 1/16" will fit with room to spare. As soon as the scope went over the wheels I could see the problem. Looking down toward the spindle I could see the lever resting comfortably on the spindle. The fence had come unsoldered from the lever, and there was enough play in the spindle to allow the driver to back off far enough for the lever to drop down in between the wheel post and the driver. (I have had a similar experience after drilling the fence off a Mosler 302, but never had I experienced this on an S & G lock). The fence had actually come out of the lever. And because the spindle had been cut off too short, the spline key had been pounded in below the surface of the driver, thus creating more room for the driver than it should have. If the spindle had been cut off at the appropriate length, or if the spline key had been put in with the flag facing out, the driver would not have been able to back off far enough for the lever to drop down. The lock would have opened every time the dial was turned to the right. But if that had happened, I would not have been able to afford the Steak n' Lob dinner that I treated myself to after this job! So I say tsk tsk and thank the guy who worked on this safe last!

Photograph three was taken with the back plate removed. The main locking bolt is on the right; the relocking bolt is on the left. The S & G R6730 is in the middle.

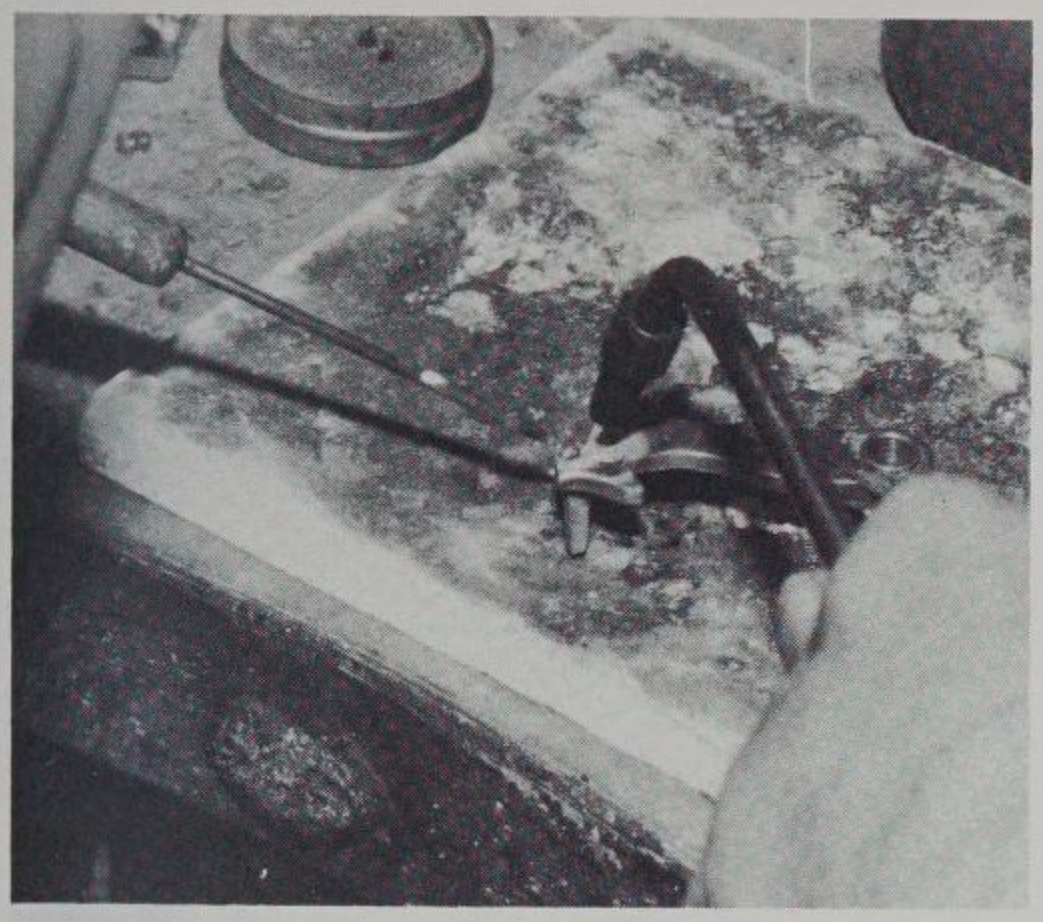


4. Door with back cover removed, showing both bolts in the extended position.

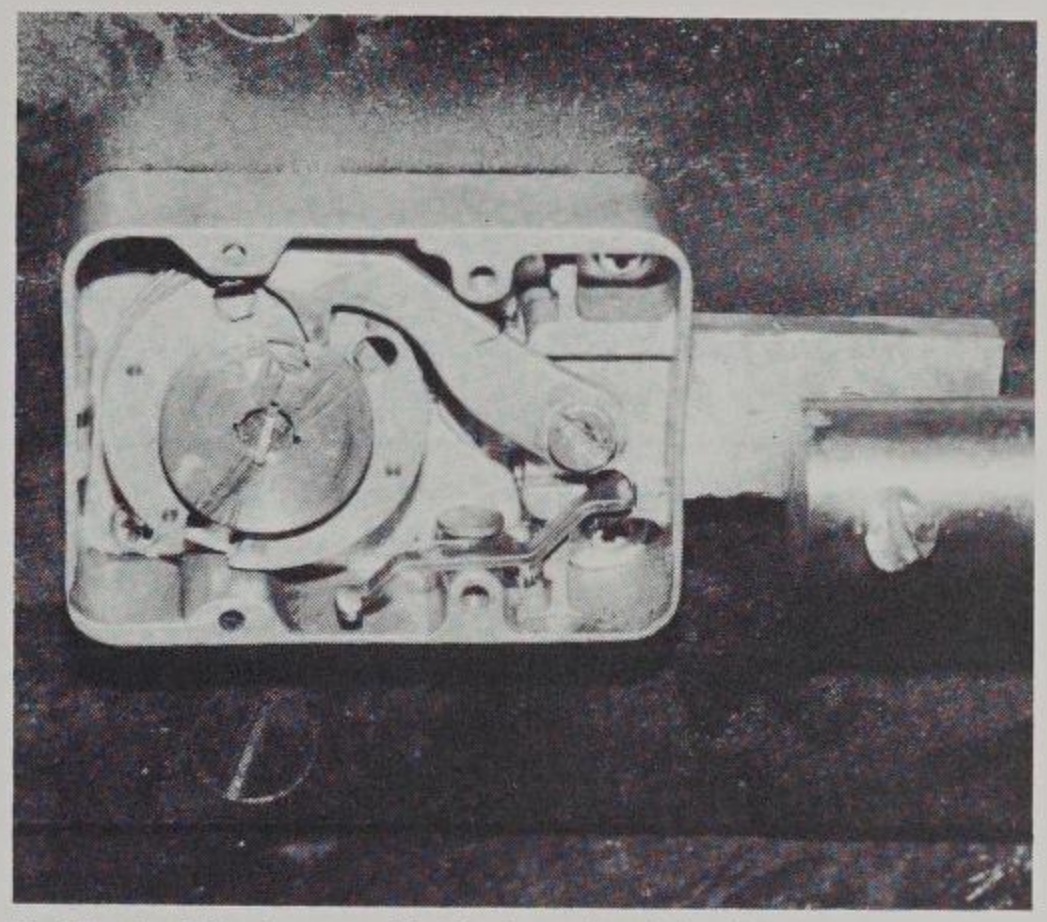


3. Lug door with the back plate removed.

5. The lever and fence. Note that the fence has been filed.



6. A repair being made on the "over-filed" fence.



7. The lock is shown with the lever back in place.

In photograph four the back cover has been removed. Both bolts are in the extended position.

Photograph five shows us the lonely lever and its fancy-free fence. From this photo it is obvious that someone, somewhere, sometime, saw fit to file the fence. It is O.K. to lightly hit the back side of the fence with a file (Johnson-Pacific did it for years) but don't overdo it like this guy did.

It just so happened that this job was for a jeweler who specializes in repairs. When I showed him the lever and fence and explained the problem, he politely offered to mend the parts. In photograph six a very competent jeweler is using *real* silver solder to rejoin the fence and lever.

In photograph seven the lever is back in place. All that remains to be done is to put the back cover and back plate on, collect the money and be on my way. Uh-oh, tell me, did I put the spline key back in correctly? ■

I still love Black Bart. You can make your own Black Bart out of a chain and pipe. If you do, you will probably like Bart as much as I do.

Drilling For Dollars

"With the flu, fever and a few faulty bodily functions, I felt like hell. The last thing I wanted to do was crawl on the floor and butt heads with Relsom."

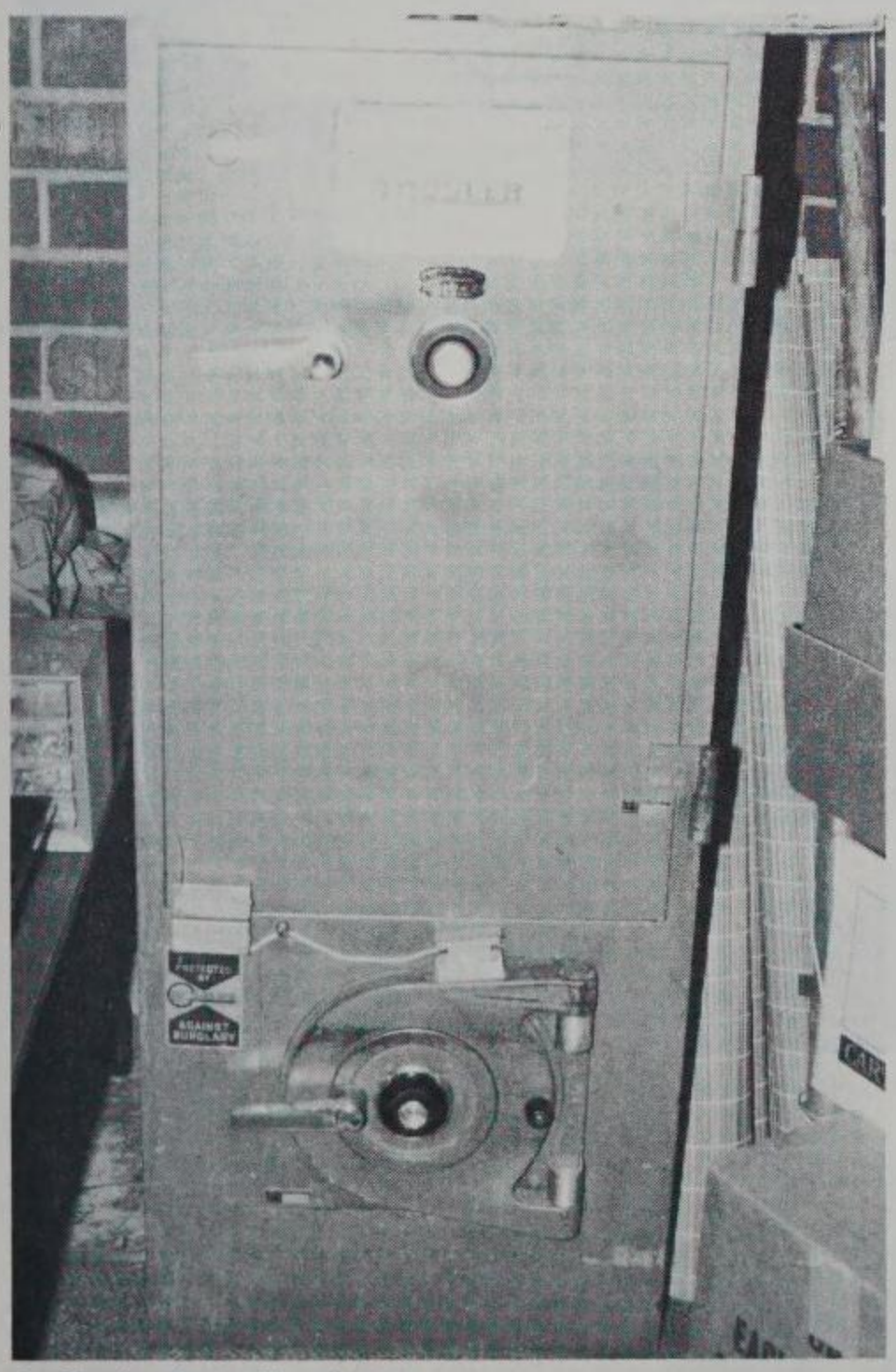
by Dave McOmie

Sometimes not feeling good can make you feel great, know what I mean? Well then, let me explain by bringing your attention to the safe shown in photograph one. This over and under Mosler was purchased second hand by a local business owner who proceeded to lose the combination to one of the doors. You can guess which one. That's right; that dirty rotten Relsom-loaded, dual-bolt lug door inconveniently situated at floor level was determined to bring me to the floor.

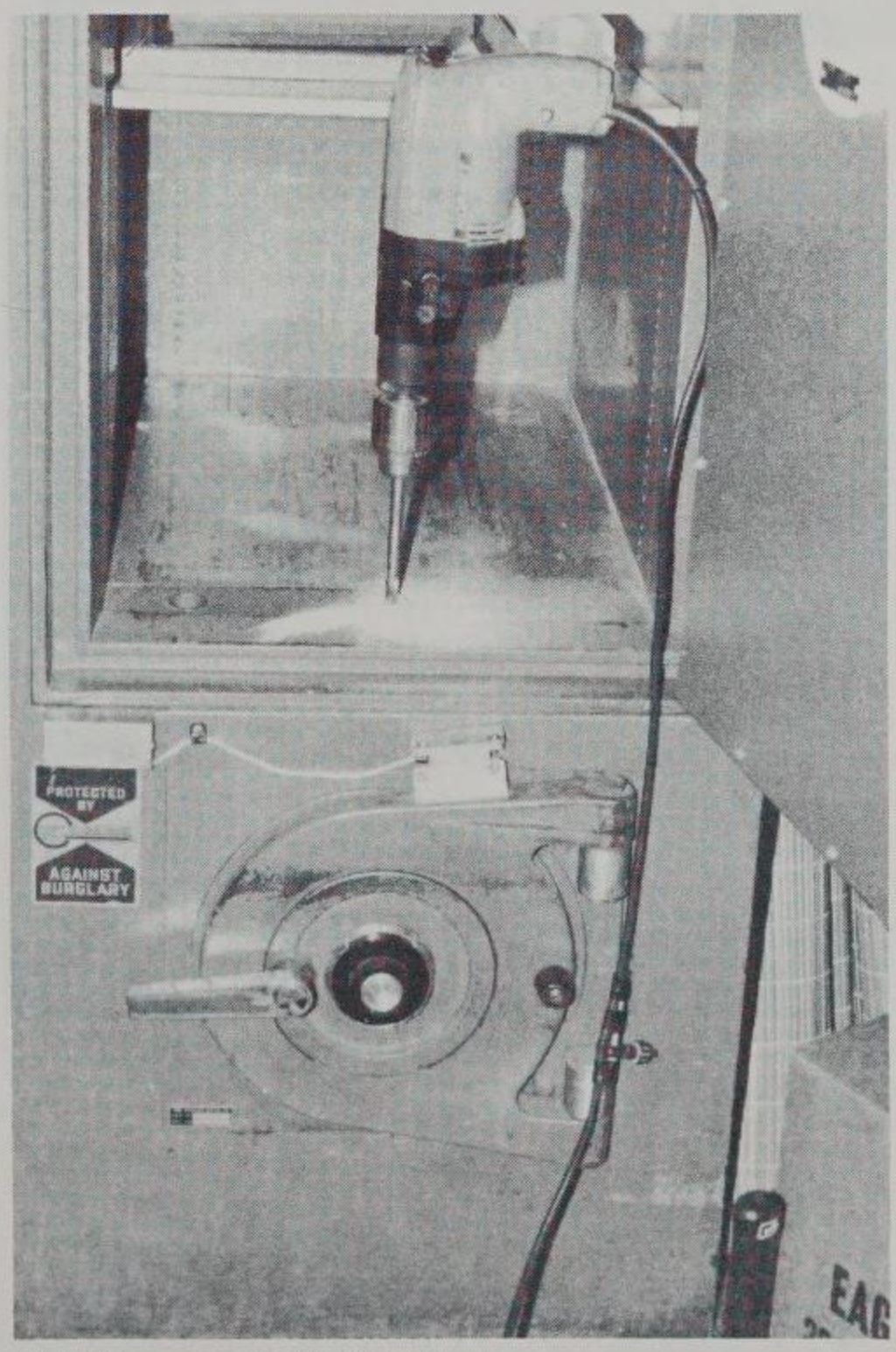
With the flu, a fever, and a few faulty bodily functions, I felt like hell and wasn't about to bend over. The last thing I wanted to do was crawl on the floor and butt heads with Mr. Relsom. So I pulled up a chair and thought it over.

The best way to avoid knobby knees is to stay off them. So I swung open the fire safe door, measured 3-¾" back from the face of the lug door, and started drilling. (*See photograph 2.*) This was something I had never done before on a dual-bolt door, so the adrenalin began to flow and energize these tired old bones. The intent was to drill into the top of the lock, scope the wheels and open the safe, rudely ignoring Mr. Relsom in the process. For once, intentions and results were one and the same, as we shall soon see.

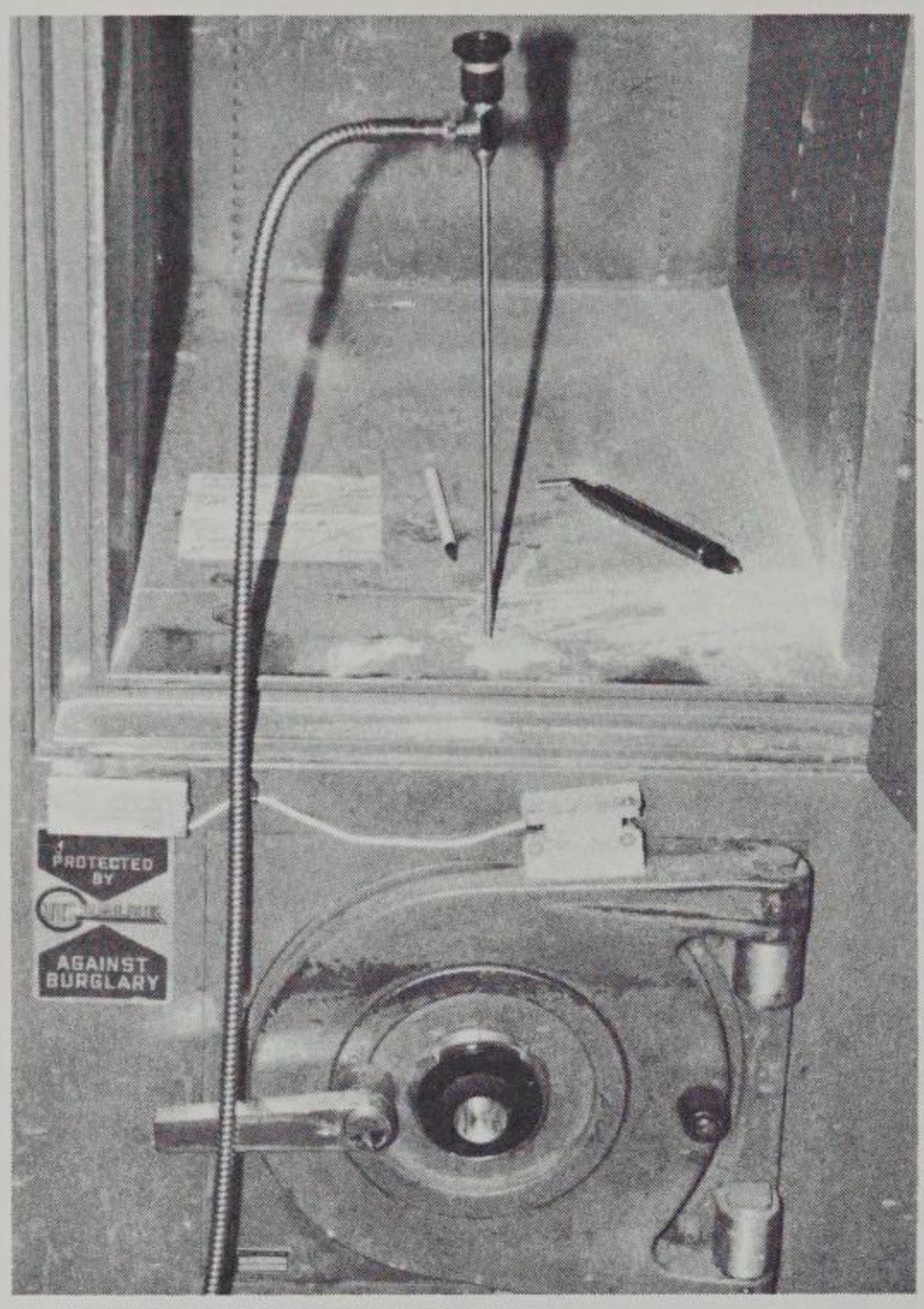
Firing up the Hornet, I penetrated the fire safe skin, hammerdrilled through four inches of insulation/concete,



1. Mosler that will not open.



2. Drilling on a dual-bolt door.



3. Scope inserted through hole in lock.

and then penetrated the one inch thick steel body. Glancing in with my straight light, I muttered those beautiful words to myself for the 5,280th time: "Right on the money!"

The hole had just cleared the back of the lug; I was staring at the round tin cover plate that hides the lock. Without wasting time, I put a hole in the cover plate, and was now staring at the top of a Mosler MR302 that was about to be had. Carefully I put a hole in the lock and inserted one of my scopes. (*See photograph 3.*)

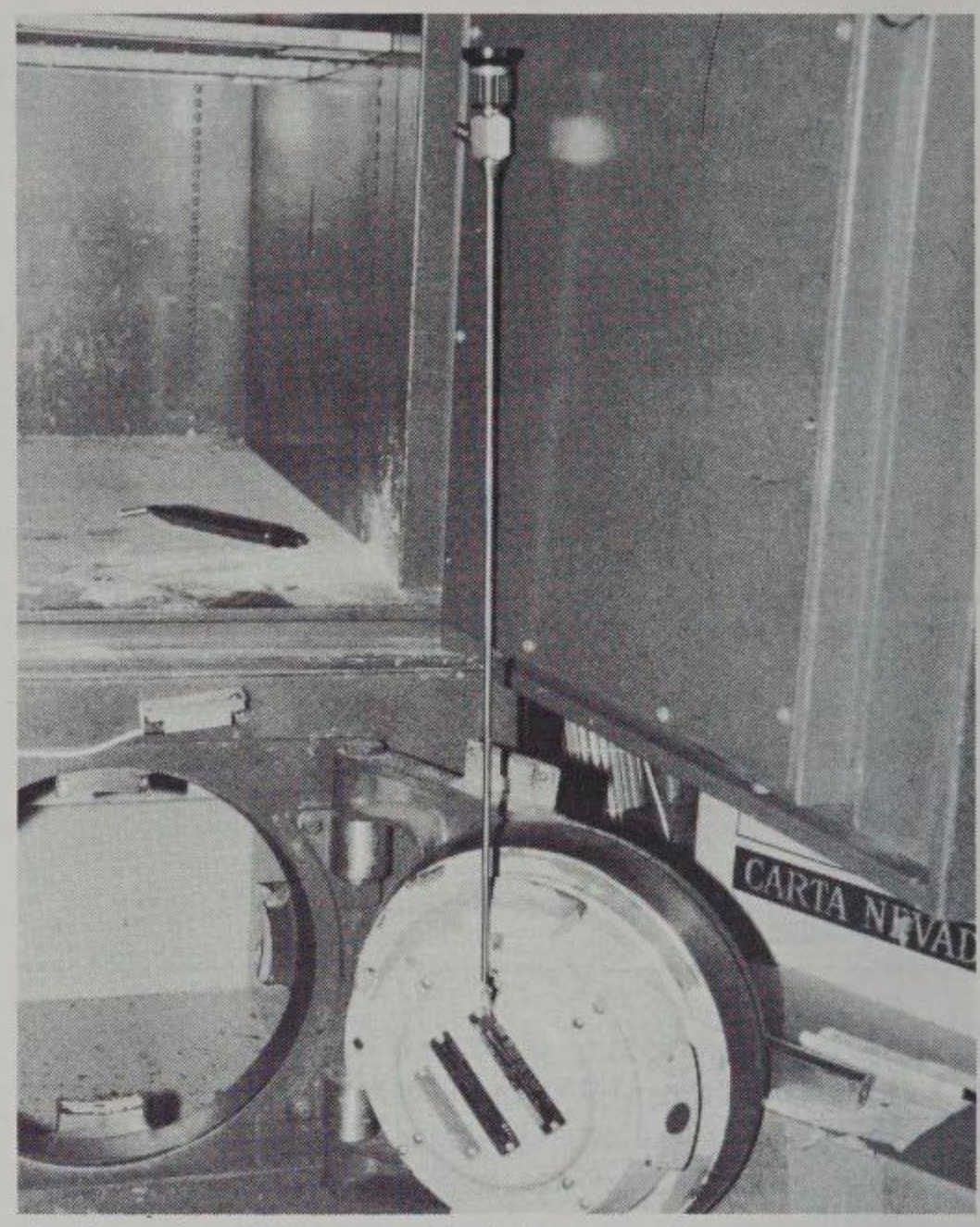
Looking through the scope, I saw two choices: I could strain to see the gates over the top of the spacer washers, or I could try to line up the gates through one of the holes in the washers. I opted for the latter. It was so slick! The gates were transferred to drop-in and the safe was open. As a mature victory gesture, I stuck my tongue out at Mr. Relsom and got off a quick "na na na-na na" while no one was looking. Even though I didn't feel good, I felt great!

So that you can better understand the technique I used, let's reenact the opening. In photograph four my scope is sticking out of the hole in the cover plate.

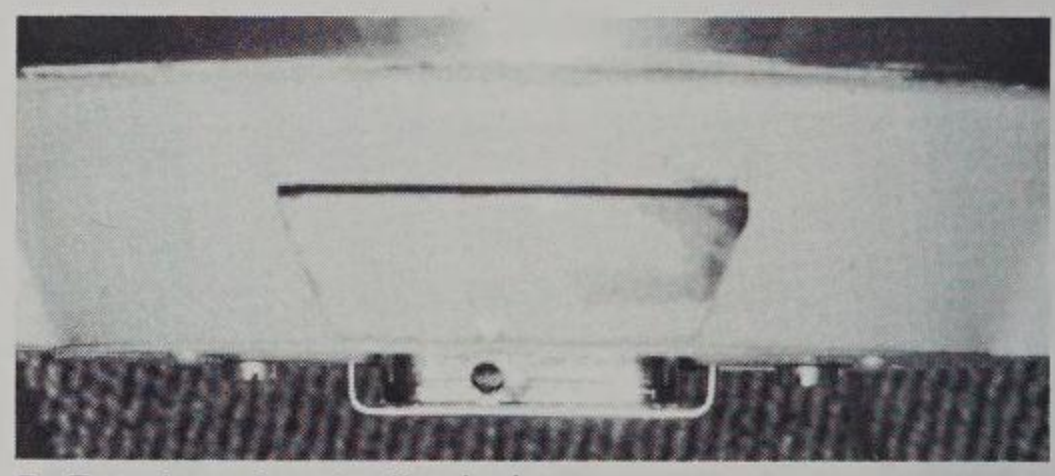
In photograph five, you can see why it worked. This is a top view, and as you can see, the lock actually protrudes out past the lugs by about ½". I did not drill at an angle; I drilled straight as an arrow, and you can see it enabled me to penetrate the back of the case nicely.

Photograph six clearly shows the point of penetration into the lock. Notice the bellcranks on either side of the lock that control the locking bolts. Also notice that the lock does not sit flush against the door; it is mounted on thick washers.

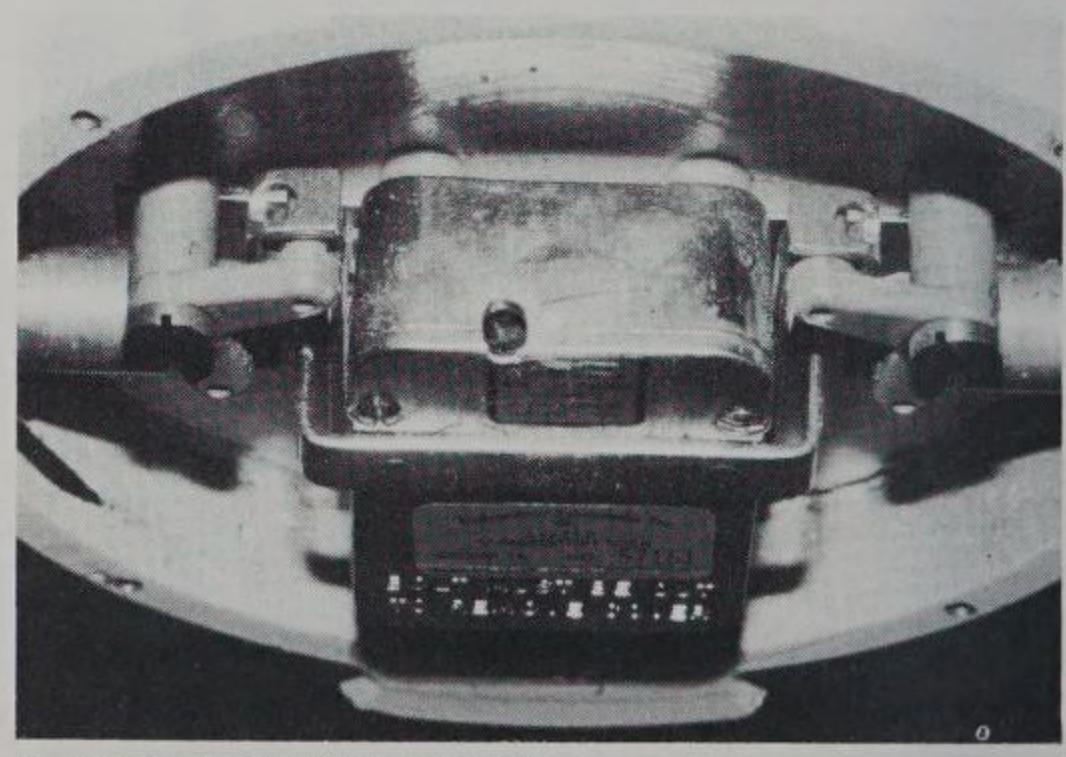
In photograph seven, the back cover of the lock has been removed, and I am using one of the cover screws to remove the spline key (see arrow).



4. Scope is sticking out of hole in cover plate.

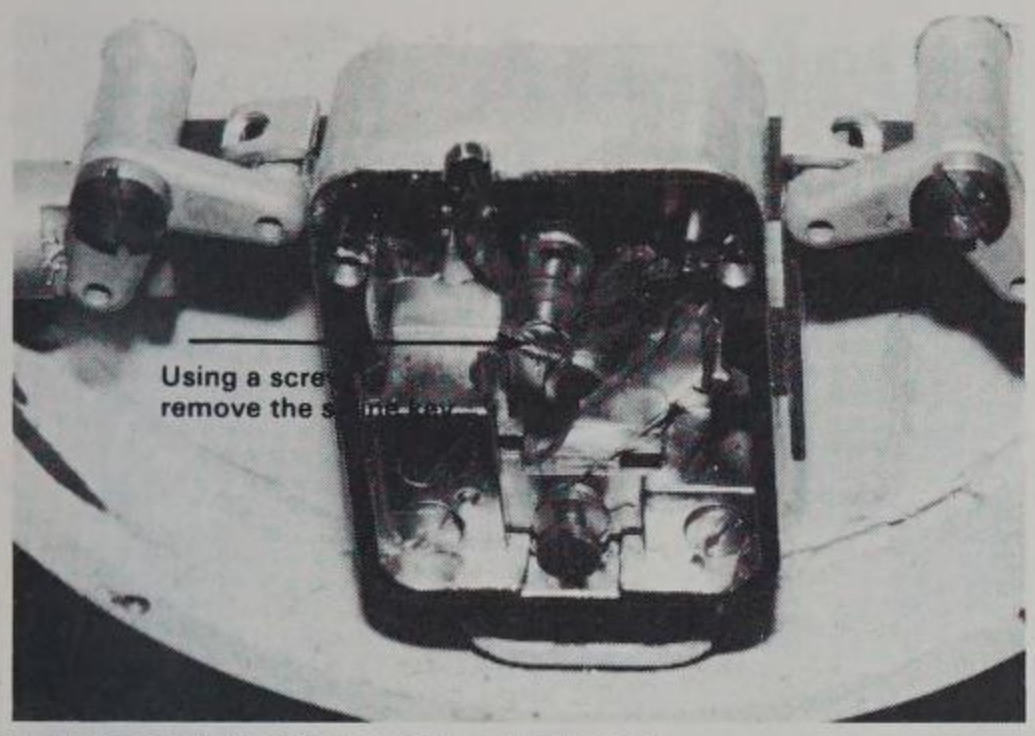


5. Top view of protruding lock.

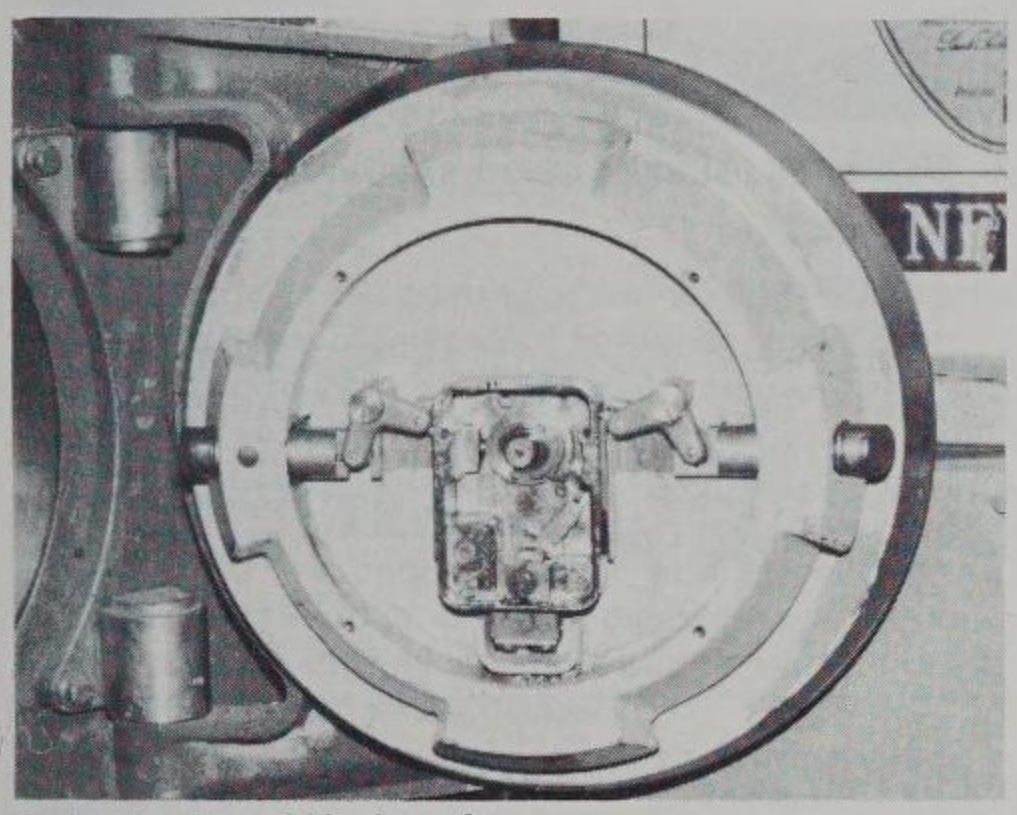


6. Point of pentration into lock.

Photograph eight shows us the inside of one of the toughest safes ever built. I think the Mosler dual-bolt lug door is on every safeman's you-know-what list. A quick comment: Not all dual bolt doors have Relsom. Mosler made these doors with various ratings, from E-rated on up to TRTL-30. The higher rated doors have Relsom, the lower rated doors do not. Additionally, I might add that I have never hit Relsom in the size 0 doors.



7. Removal of spline key by cover screw.



8. Inside view of Mosler safe.

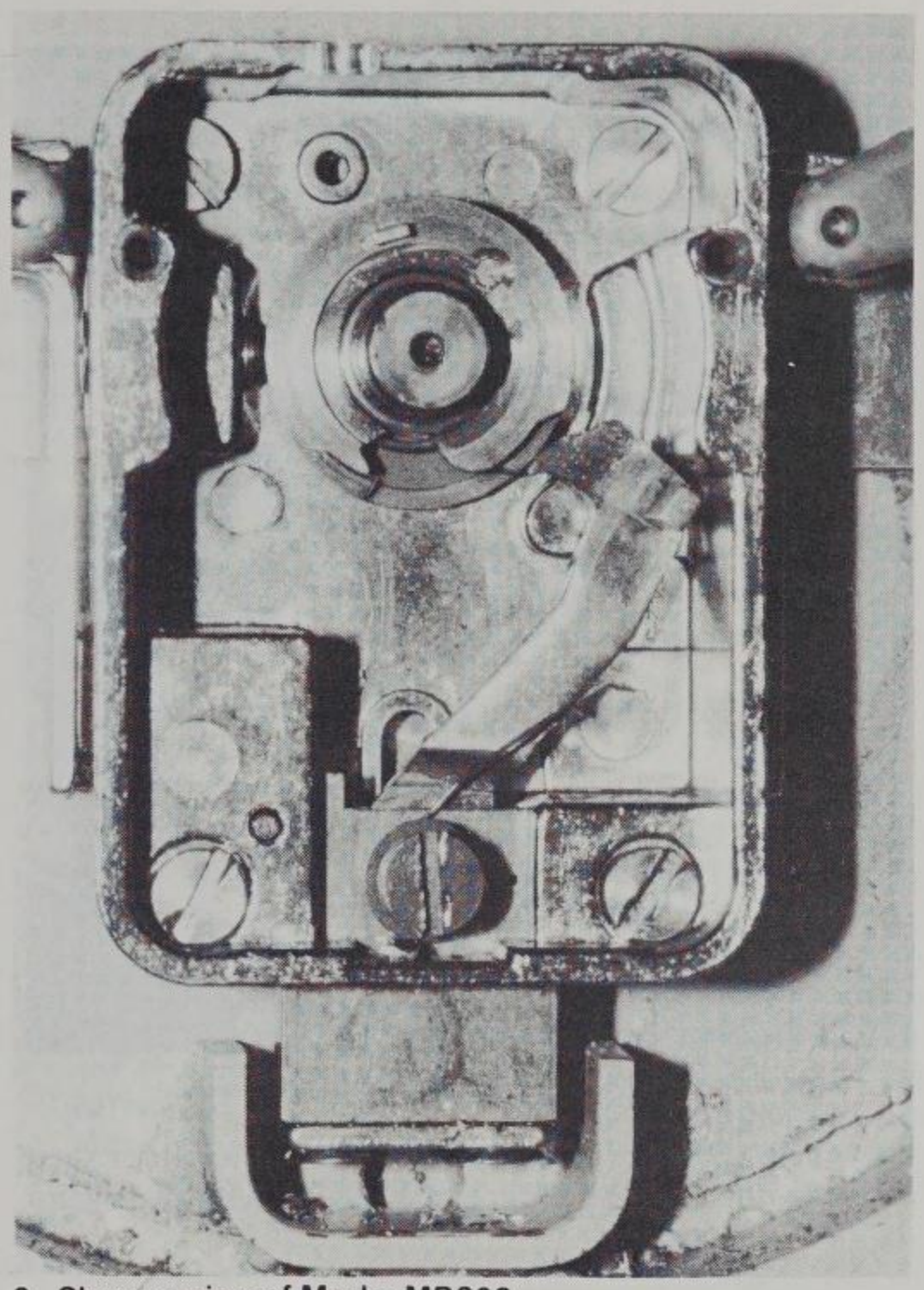
In photograph nine we have a close-up of the Mosler MR302. This lock is very easy to identify by the click-click sound it makes as you turn the dial. Notice the piece attached to the end of the lockbolt; more on that in a moment.

With the lock removed and flipped over, we can see the slide piece that runs under the lock. (*See photograph 10.*) This is why the lock is mounted on the thick washers—to give the slide room to move. The hooks (see arrows) engage the bellcranks which in turn control the locking bolts.

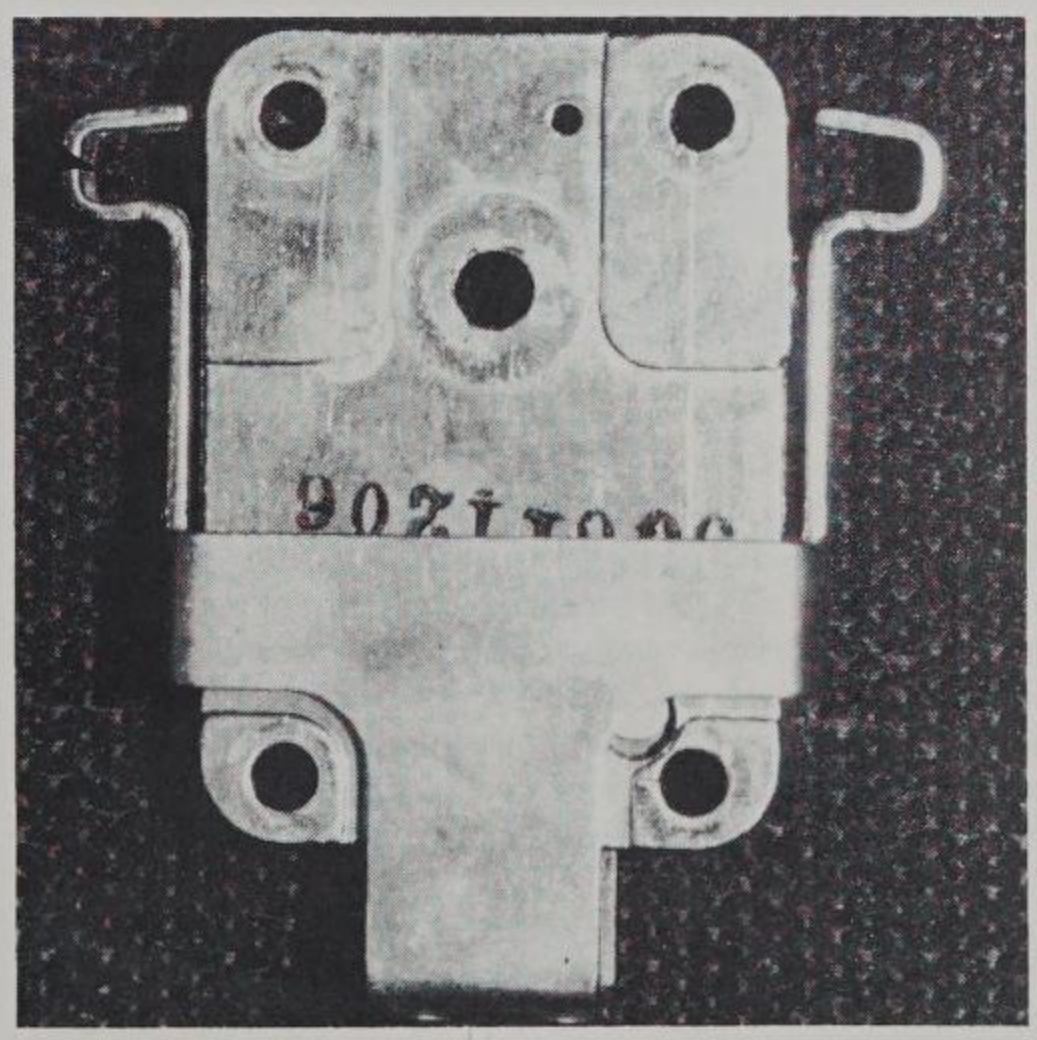
Photograph eleven shows us the back cover of the lock with the wheels, or at least most of them attached. The third wheel has been removed to expose a spacer washer, so you can see the hole I peeked through to line up the gates (see arrow). Notice the plastic feet on either side of the cover. These feet are the relock detents.

In photograph twelve, with the lock and bellcranks removed, we can see the piece of flat spring steel that does relocking duty. When the back cover of the lock is removed, this single piece of flat steel will prevent both locking bolts from retracting. Simple but effective.

One final word on going around Relsom in the dual-bolt lug door: on this particular day, I did not feel too good, and made a top penetration to avoid having to wiggle around on the floor. A successful top penetration has to be absolutely perfect; there is no room for error. A surer, much less risky attack would be through the side. Penetrate the opening side 3¾″ back from the face of the door, 1⅛″ down from dial center. After you get your hole through the body, drill



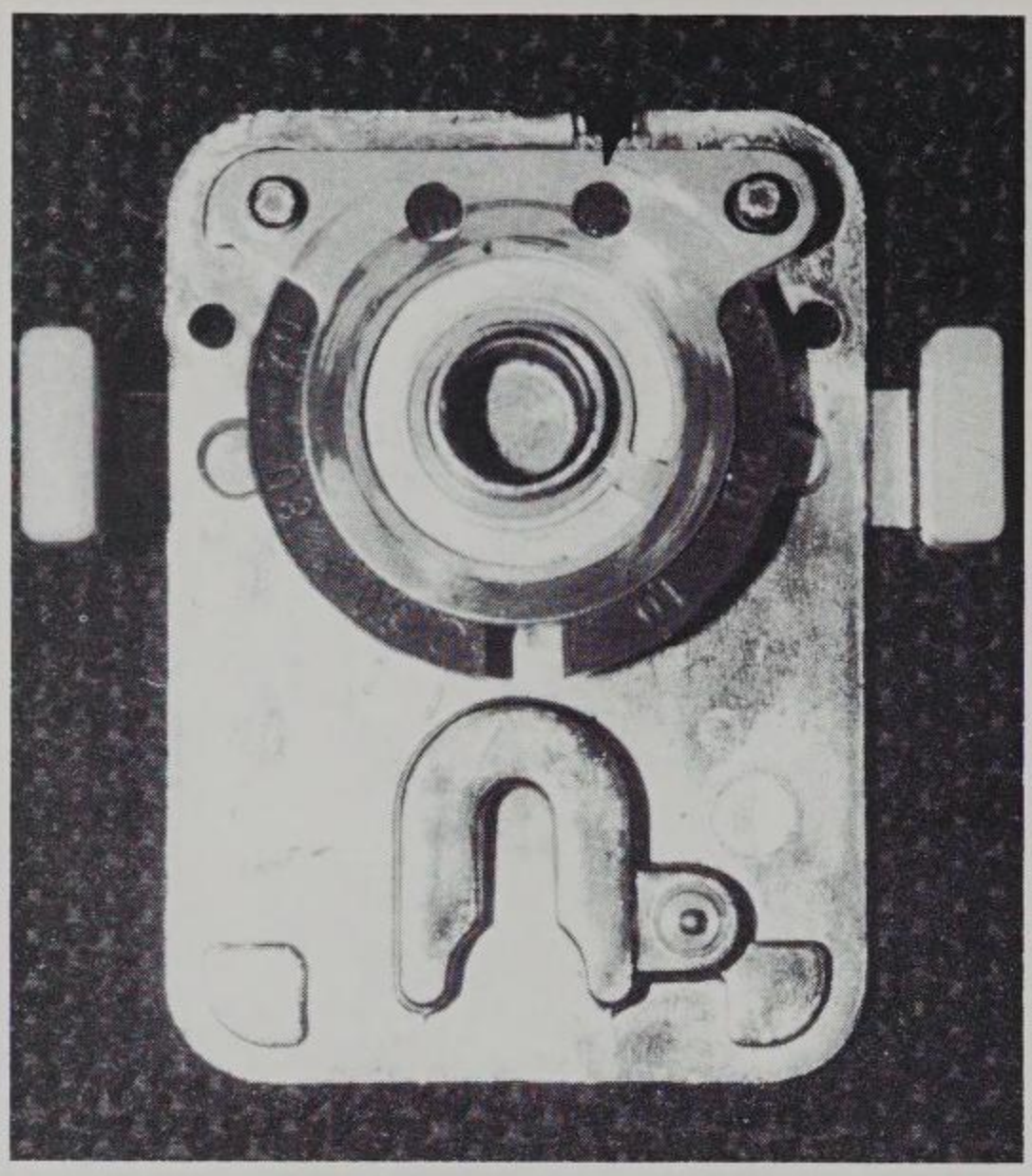
9. Close-up view of Mosler MR302.



10. Thick washers allow the slide room to move.

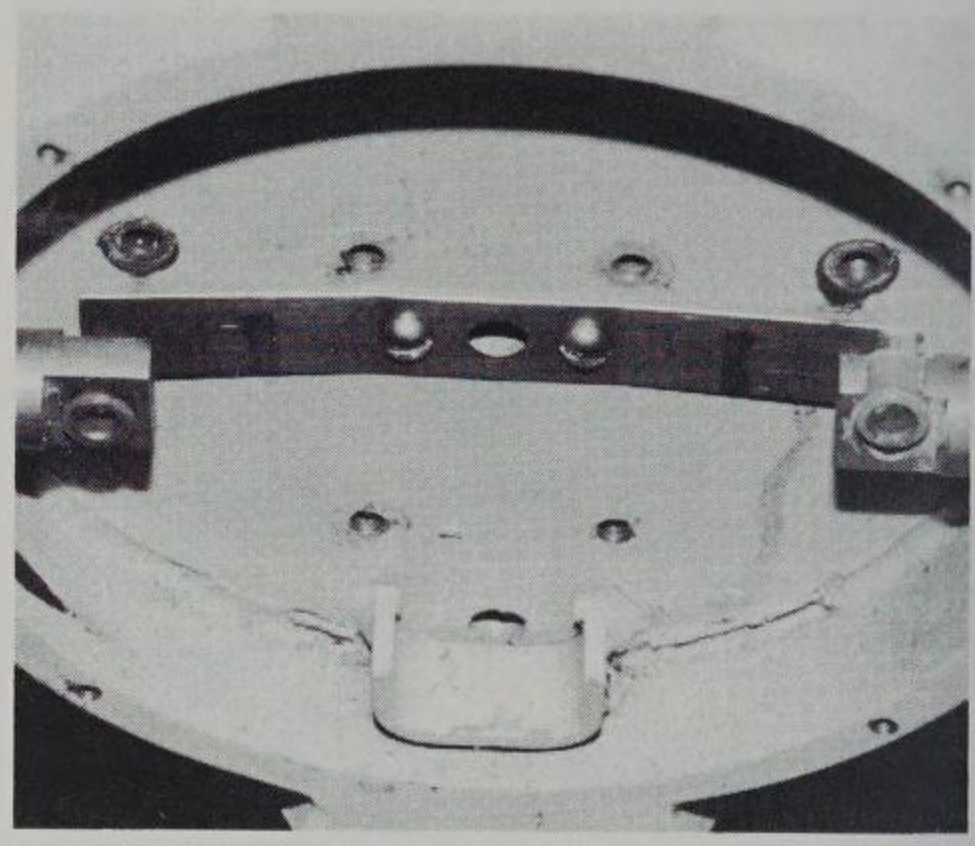
through the tin cover plate and then into the lock. Through your scope you can align the gates directly under fence, no transferring necessary. And the hole is strategically placed in an area where the chances of doing damage to the lock are virtually nil.

This technique is obviously designed for dealing with a lost combination. But what if you are dealing with a malfunction in the lock? This gets a little more complicated, but



11. Back view of the lock with the wheels attached.

not much. In this eventuality you will need to go for the fence. To do so with a side penetration will require angling in just a hair. Instead of measuring 3¾" back, you will need to measure 4½" back, 9/16" below dial center. Angle in slightly toward the front of the safe; this will bring you right in on the fence. And I promise, even if you don't feel good, it will make you feel great! ■



12. The piece of flat spring steel does relocking duty.

See the Lockmasters straight light laying in the fire safe in photograph four? Well, that is where it stayed — I left it on the job and never returned to claim it. But that is a story for another day.

Art Metal Security File

"When a non-manganese, non-included hardplate causes me grief, I know I'm getting old. But I resorted to the Framon drill rig and a few minutes later I was in."

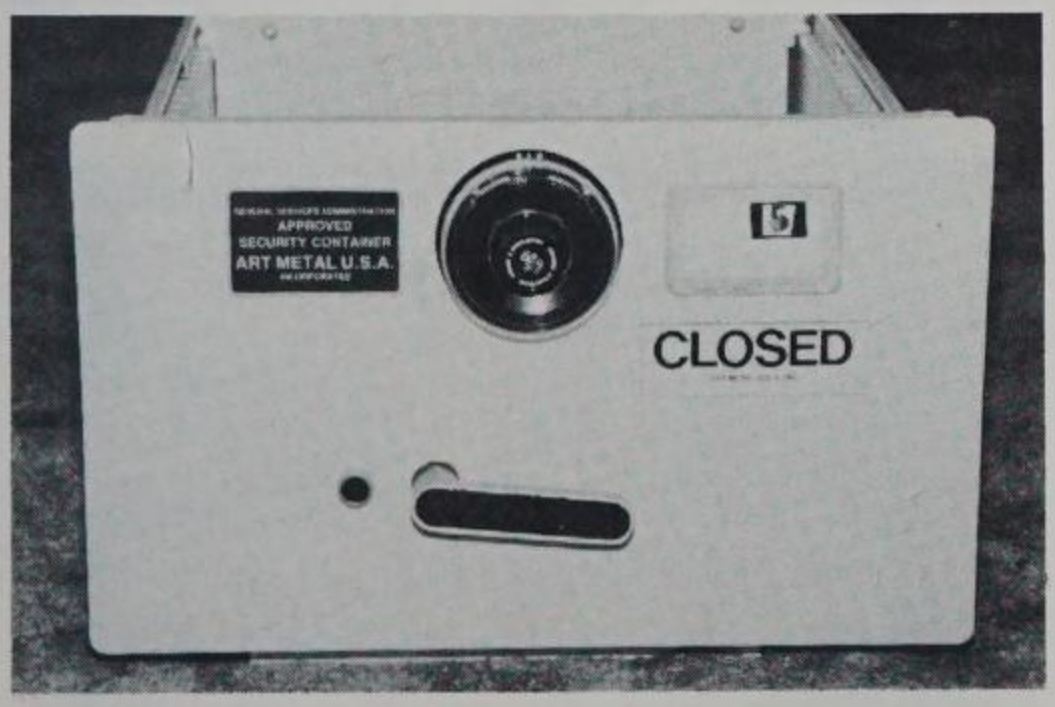
by Dave McOmie

Good grief, I am starting to feel my age. When a non-manganese, non-included hardplate causes me grief, I know I'm getting old. I can remember as a youngster pushing on my Lee Rig for hours on end with no noticeable effect on my well-being. Not so today. We baby boomers are entering the age of aches and pains. Great. I only hope the wisdom that is supposed to come with age will offset the physical deterioration. If so, I should be the wisest man on earth before I turn 40. In this business we should all be thankful for labor-saving devices.

The Art Metal security file shown in photograph one caused me a little grief before I resorted to one of my favorite labor-saving devices.

On this particular day the winder on my camera decided to break off as I started to photograph this opening. (Which upsets me, as I had had to deal with another Morton Downey clone to clear the photos—I get no pictures, the safe can't be opened, understand?)

Since my camera was out of commission, I decided to take the drawer head out of the Top Secret For Your Eyes Only Oliver North Confidential Shredding Room under the pretext of doing the repair. This was not exactly honest, as it is my policy to do all repairs on the job site; but if I had done so this article could not have appeared in *The National Locksmith* magazine. What all this means is that what follows is a reenactment, done in the privacy of my living room, after I had opened the file, and after I had replaced the broken winder on my camera.



1. Art Metal security file.

Here is what happened: The call came from John Kerr of AA Safe & Lock. A Captain so-and-so of a such-and-such branch of the military had lost the combination to his security file. It was obvious that a Major had yelled at the Captain up one side and down the other, so I kept the conversation as upbeat as possible. "Hey, no big deal, it happens every day. That's what keeps me in business!" People are always relieved to find that there are others who make the same mistakes. The Captain felt a little better.

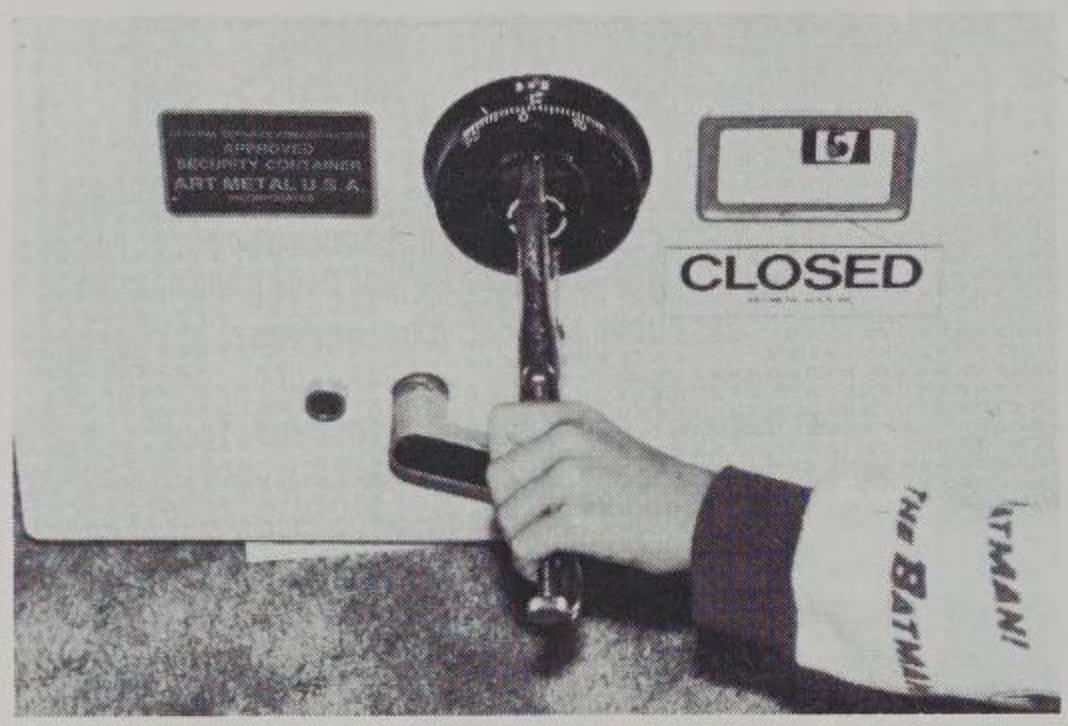
Photograph two is a close-up top view of the dial and dust cover. The dust cover is for James Bond protection. The intent is to guard against anyone dusting the dial and ring for fingerprints in an attempt to determine the combination.

2. Top view of the dial and dust cover.

In my view, the best approach to almost any GSA container is a straightforward, through-the-door attack. The exact spot to aim for depends on what lock is on the inside. For all intents and purposes there are only four possibilities: S&G 8400, S&G 8500, Mosler MR302 and LaGard 1980/1985. (As I pointed out recently, Mosler and LaGard locks are no longer approved for use in GSA containers, but there are still quite a number of them in use on older containers.)

Distinguishing the locks is easy. The 8400 has an inner knob in the center of the dial that can be turned when the dial is set on zero. The 8500 pushes in at zero. The MR302 goes click-click as you turn the dial, but requires no secondary function to open the lock. The 1980 makes no click sound, nor does it require a secondary function—it is very user friendly. (It is my guess that the user-friendliness of the Mosler and LaGard locks is what caused them to be disowned by Uncle Sam when the automatic dialer hit the market. The S&G locks, in requiring a secondary function to open them, cannot currently be opened by the dialer. It makes you dream of stock in S&G, doesn't it?)

The dial on the Art Metal says S&G on it, and it pushes in at zero. This indicates an 8500. I know of no gentle way to remove the dial from the spindle. With the dust cover removed (they just snap into place) photograph three shows my favorite tool for removing the dial on an 8500. Yep, a plain old vice-grip does the job nicely. Gently rock the dial up and down till it breaks off.

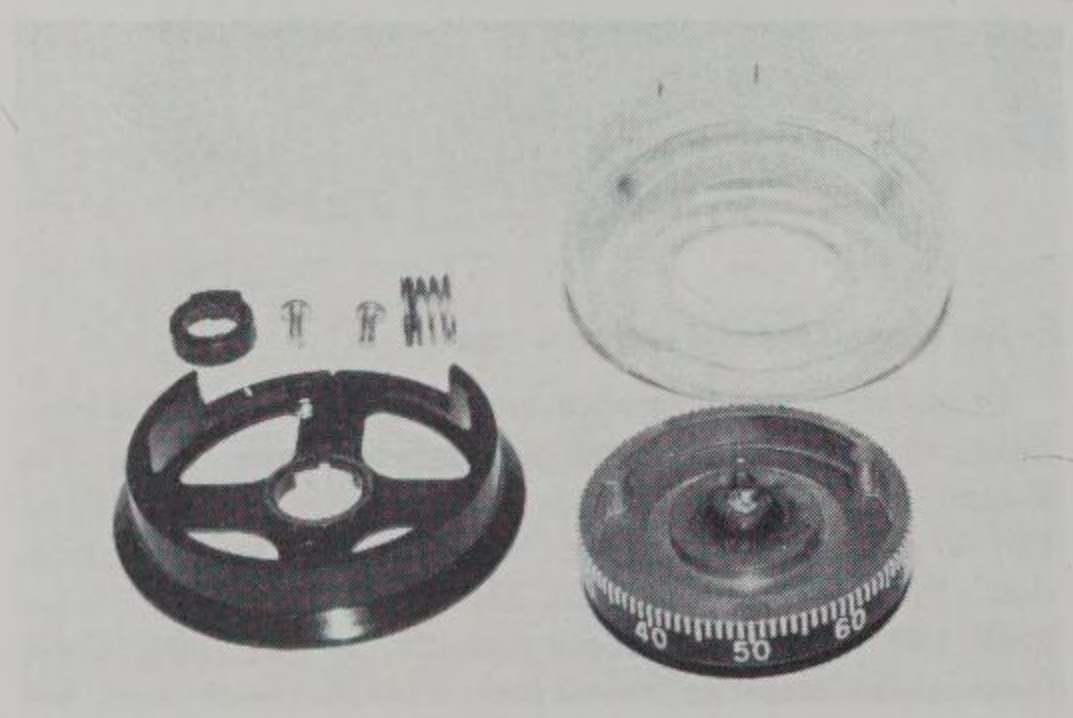


3. Vice grips are used to remove the dial on the 8500.

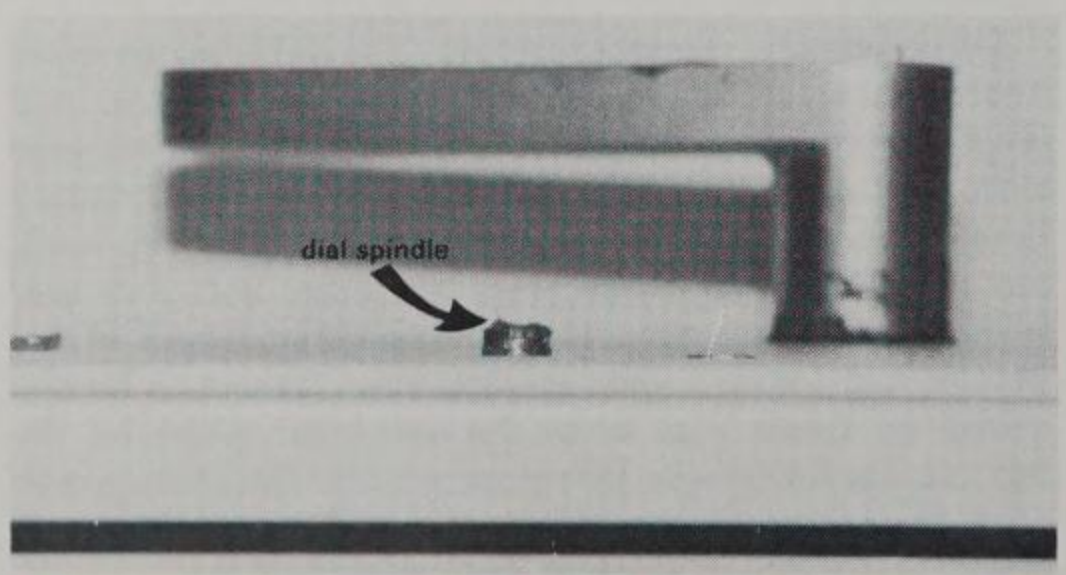
Next we remove the dial ring. Photograph four shows the parts we have removed up to this point: the dial ring, dial bearing, dial ring mounting screws, 8500 dial spring with washer, dust cover and the broken dial.

Photograph five is a top view showing how much of the spindle is left sticking out of the safe after you break the dial off. It is about 3/16". More than enough for a small vice-grip to grab onto when the time comes to rotate the wheels.

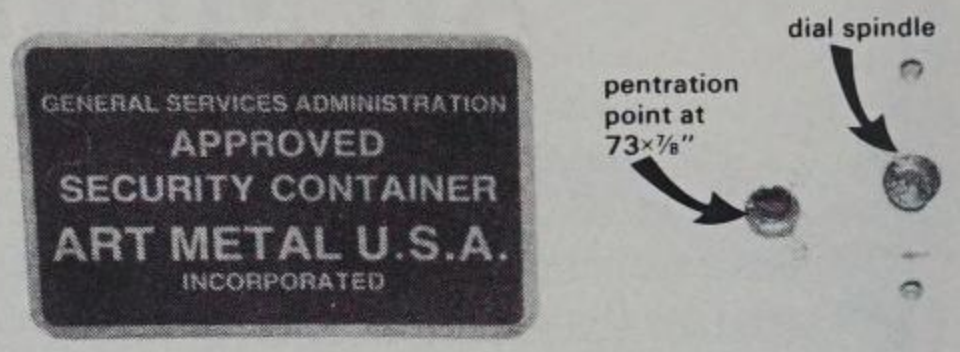
Going right for the drop-in point on an 8500 mounted VD, photograph six shows a 5/16" hole that was carefully



4. Parts of the disassembled dial.



5. Arrow indicates spindle stub left after breaking the dial off.



6. Hole drilled at 73×7/8".

placed at 73 × 7/8". The hole is down to the smooth hardplate. I do not know for sure what the heck this plate is made of, but I can vouch for its hardness. (I have heard it is called Chemloy and was developed by Centurion, but do not have confirmation at the time of this writing.)

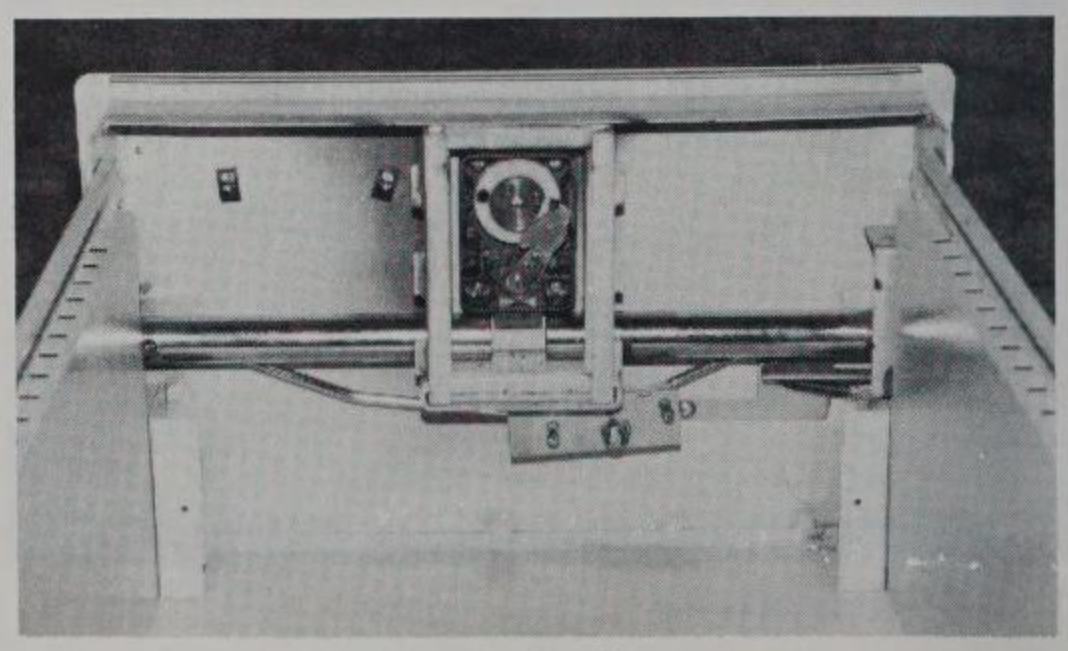
I am having a hard time figuring Art Metal out. I have drilled a few of their safes open that penetrated like butter, and I have drilled a couple open that were quite respectable. Black Bart and my Lee rig got me nothing but a sore back, so I hooked up the Framon. Nothing can stop—or for that matter slow down the Framon, ten minutes later the 5/16" hole was completed.

Looking in the hole, I could see the fence and wheels. Lining up the gates took a minute or two. Pushing in on the spindle activated the accelerator spring which caused the fence to jump into the wheel gates—the lockbolt was retracted.

In photograph seven, the lock is open and the handle turned clockwise, retracting the locking bolts. The only thing left to do to open the cabinet is to push the little button next to the handle, to the right.

Some of you sharp-eyed readers may have noticed the

7. The lock is shown here, opened.



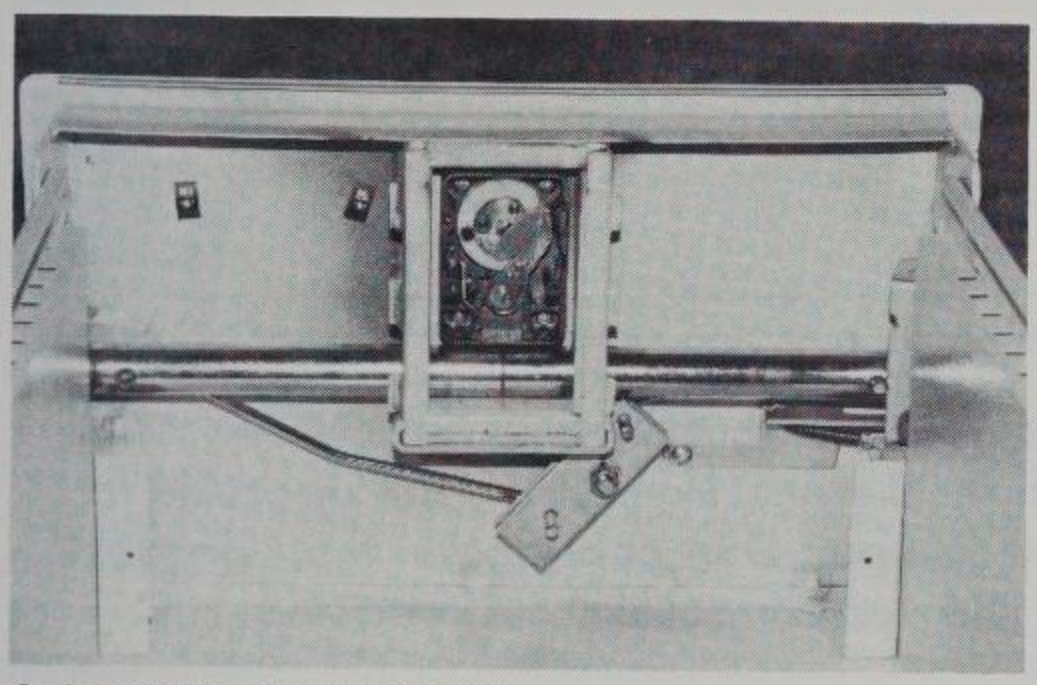
8. Inner workings of the security file.

OPEN/CLOSED sign that has been following us through the opening. This is a little magnetic sign that is supposed to be used to designate at a glance the status of the container.

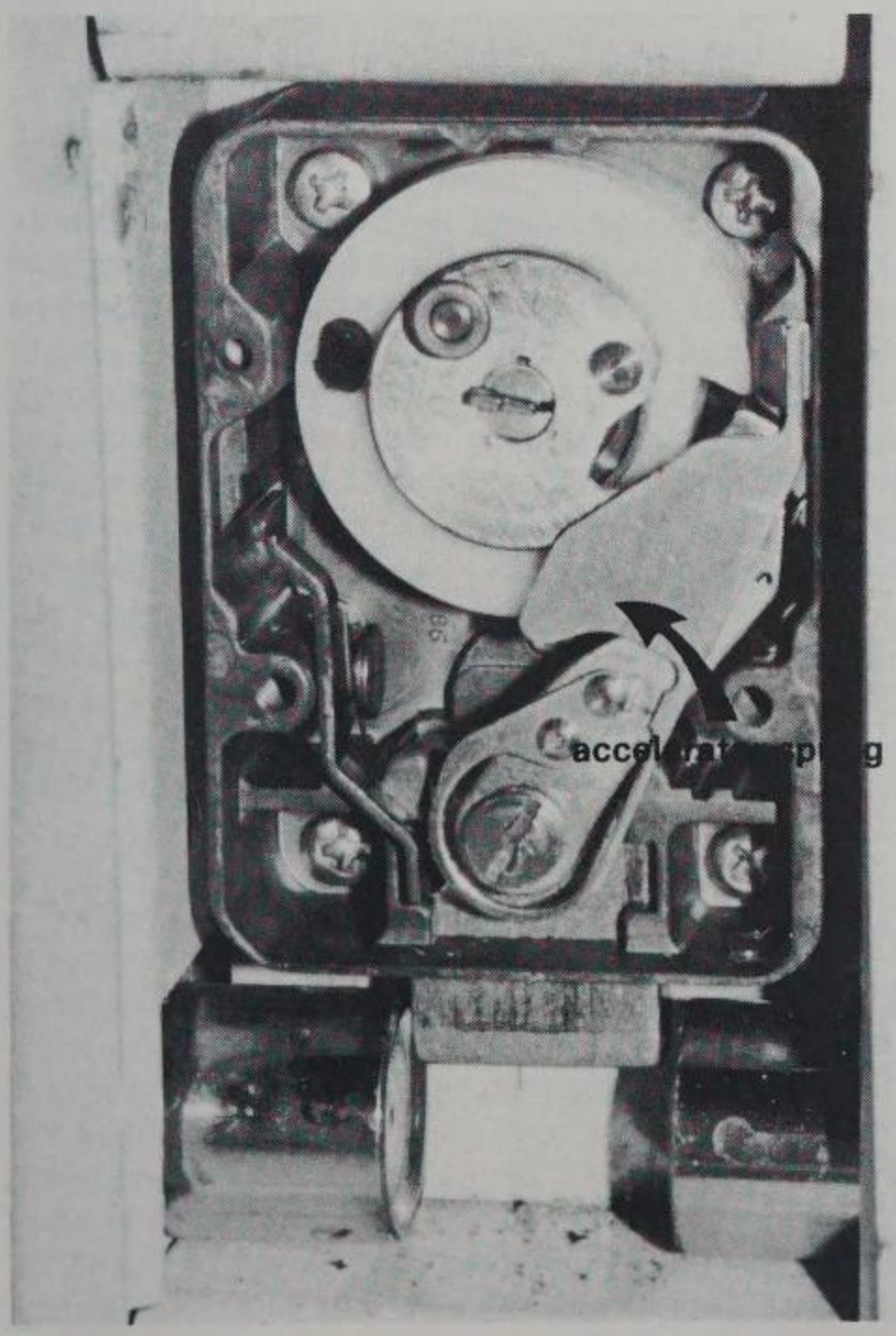
In photograph eight we can see the inner workings of the Art Metal class 6 security file. As you can see, it is fairly simple. The dual locking bolts are blocked in the middle by the lockbolt of the 8500.

In photograph nine, the lockbolt has been retracted, allowing the handle to retract the dual locking bolts. In this photograph the file is in the unlocked position. Notice how the locking bolts meet in the middle.

Photograph 10 is a close-up of the 8550 in the locked position. The silver colored piece that partially obstructs our view of the fence is the accelerator spring.

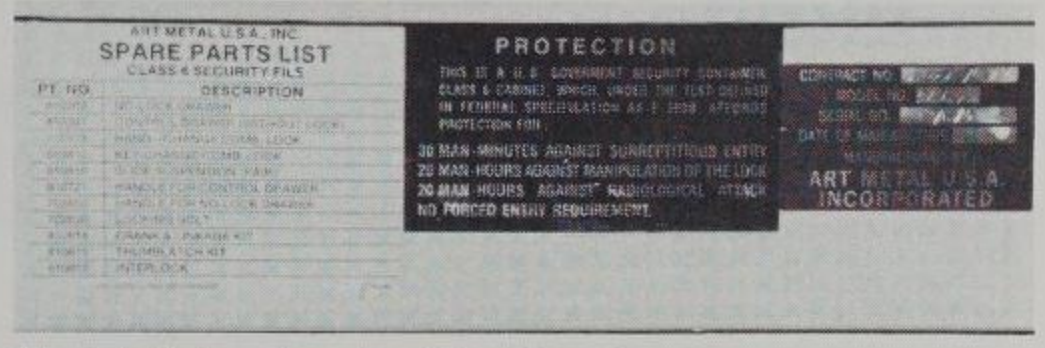


9. Lockbolt is shown retracted.



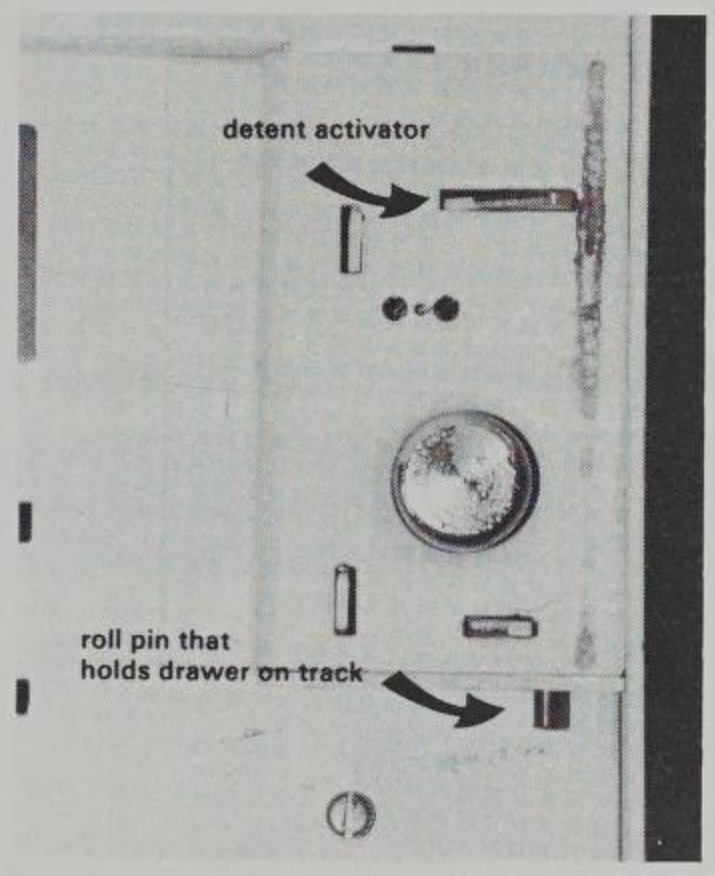
10. The 8550 in the locked position. Notice the accelerator spring.

Photograph 11 shows all the labels on the side of the file. On the left is the manufacturer's Spare Parts List; in the middle is the PROTECTION label; on the right is the serial number label.

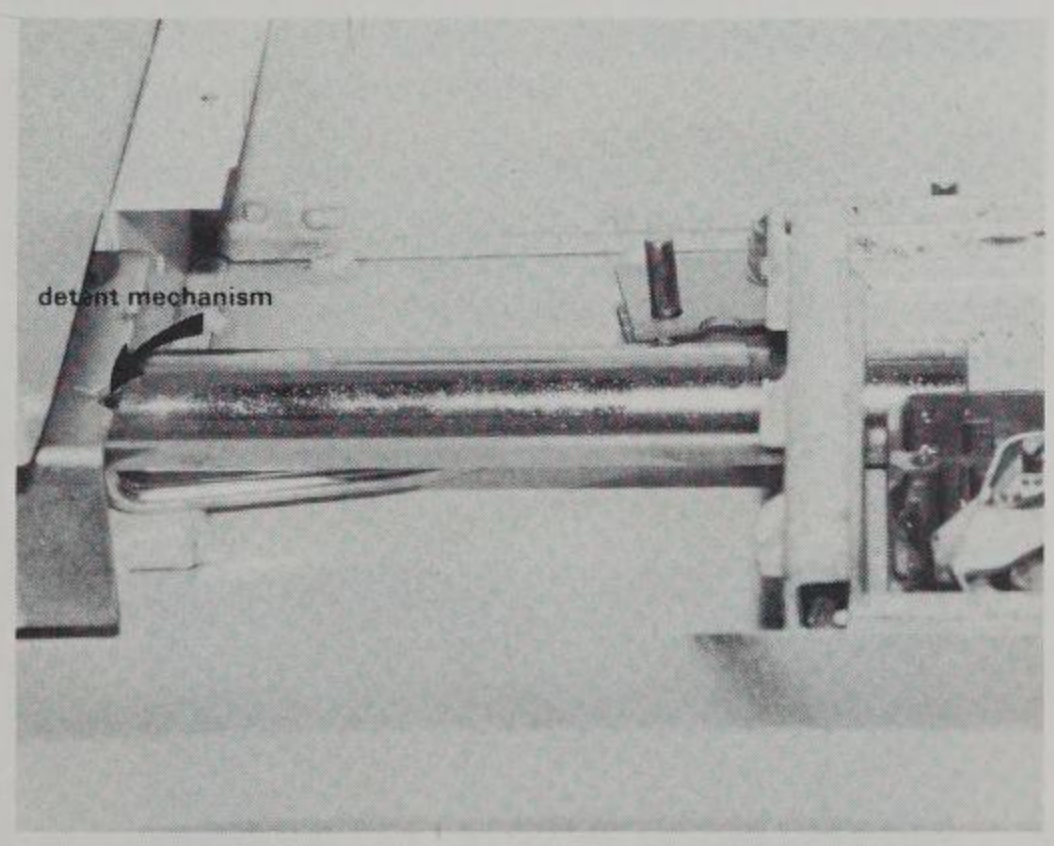


11. Labels found on the side of the file.

Photograph 12 is a side view of the drawer head. You can see the locking bolt in the center of the photograph. The

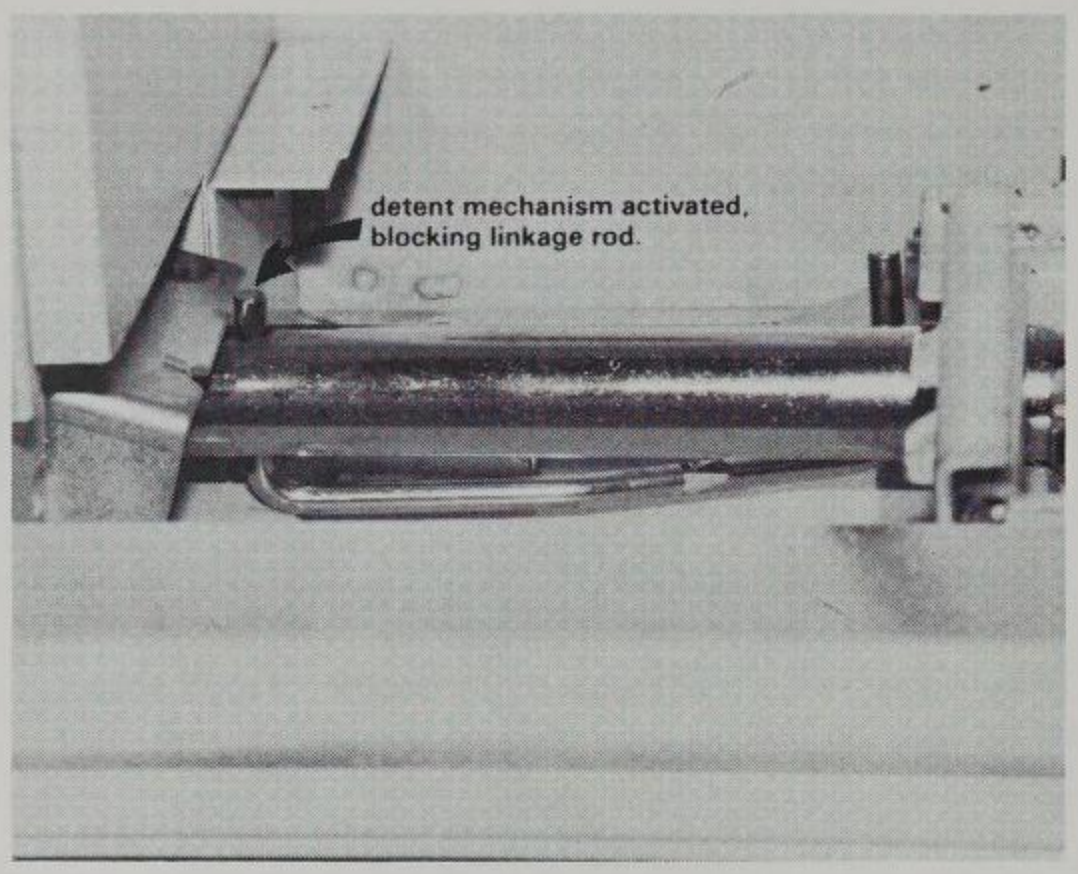


12. Side view of the drawer head.



13. Looking at the locking bolt inside the drawer.

screw below and to the left of the locking bolt must be removed, as must its counterpart on the other side of the drawer, in order to lift the drawer up about ⅜". Lifting up about ⅜" will allow the roll pin to clear the track; the drawer will now slide all the way out. The upper arrow points to the detent activator, which we will now examine.



14. Locking bolts are shown retracted.

In photograph 13 we are inside the drawer looking down on the locking bolt and the detent mechanism. In this photograph the locking bolt is in the extended or locked position. The detent is the long flat piece shown by the arrow. Part of the detent protrudes out the side of the file, as we saw in photograph 12. Only when this is held in can the bolts be thrown, as we will soon see.

In photograph 14, the locking bolts have been retracted. In this position, the linkage rod controlling this bolt has cleared the spring-loaded detent mechanism, allowing it to drop into place behind the linkage rod, effectively preventing the bolts from being thrown until the drawer is shut, or until someone pushes in the detent activator we saw in photograph 12. ■

Oh, GSA containers were so much more fun to open back in the black label days. Now any goober with a carbide tipped hole saw can do the job. Somehow, the upgrade to red label led to a downgrade in the skill required to open GSA containers. Sour grapes? Nah, just a legitimate lamentation about the declining need for precision.

Norfolk's GSA File

"Carl was visibly excited this night. After we got our pizzas, he said, 'Guess what I have in my shop?' I didn't have the faintest idea, but I made a few stabs at it."

by Dave McOmie

In the safe business, we get kind of used to seeing something a little different once in a while. None of us ever seriously entertains the notion that we have seen it all, not even me. But recently I saw something that was more than just a little different; it was a lot different. Not only had I never seen one before, I had never heard of it. To this day it is the most bizarre "safe" to make my acquaintance.

I was on a secret spy mission for Colonel North, hanging out in the basement of the White House, when Fawn Hall sent me out for pizza and scissors. The pizza was for lunch, the scissors were for manual use—the shredder had broken down. Anyway, I was in line at Pizza Hut when I got the feeling everybody was staring at me. Us spies have a sixth sense about that kind of thing, you know. Then I realized that my trench coat and mirrored sunglasses might be blowing my cover, so I took them off. Just as I did so, I noticed another company man following my lead. As he removed his shades I instantly recognized him: it was my old friend and comrade-in-arms, Carl Cintron, of Cintron Safe & Lock.

Like me, Carl also moonlights, though he is yet to achieve double-oh status. (CIA and State have been a little tougher than MI5 in recent years.) In his cover job Carl is one of the premier safecrackers in the greater Washington D.C. area. He is also one of the funniest guys on the face of the earth.

Well, Carl was visibly excited this night. After we got our pizzas, he said, "Guess what I have in my shop?" I didn't have the slightest idea, but as we were walking to our cars I made a few stabs at it.

"A real freedom fighter?"

"No."

"A gagged and bound KGB agent?"

"No."

"The social security trust fund?"

"No."

"Carl, I give up. What do you have?"

"A Norfolk!"

"A what?"

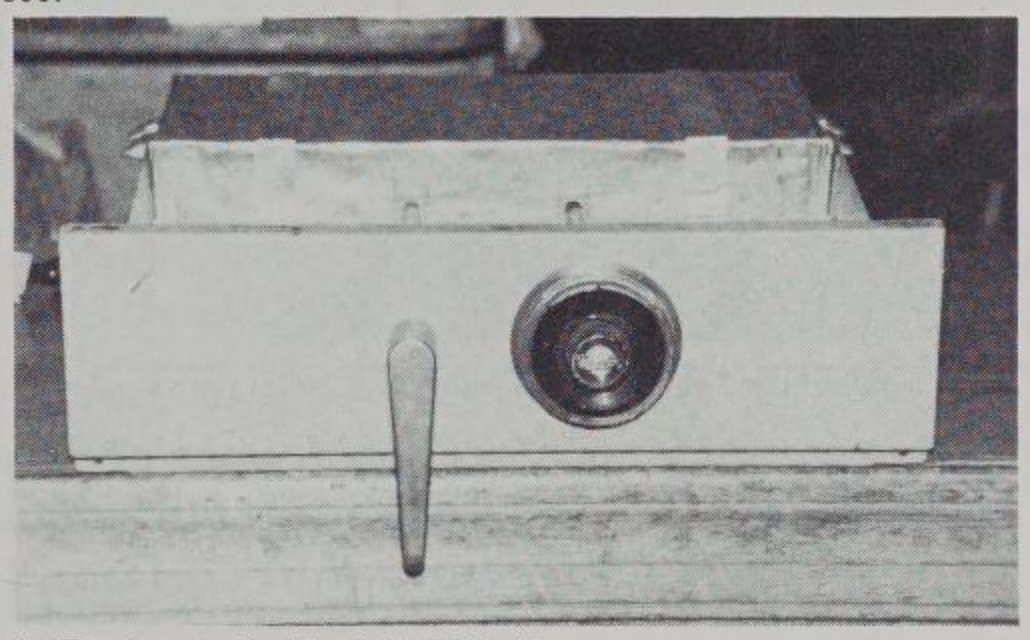
"A Norfolk GSA File!"

"Gosh, that's nice Carl, but I would rather go have pizza with Fawn. And that reminds me, I need to stop for scissors."

"Dave, I promise, this file is more interesting than Fawn. You have got to come over and take a look."

Now Carl isn't given to hyperbole, so I knew this Norfolk whatever-it-was must be pretty hot. So I figured I would stop by and take a quick look at it on the way back to headquarters. After all, I didn't want to surprise Mr. North and Ms. Hall like last time. That was embarrassing.

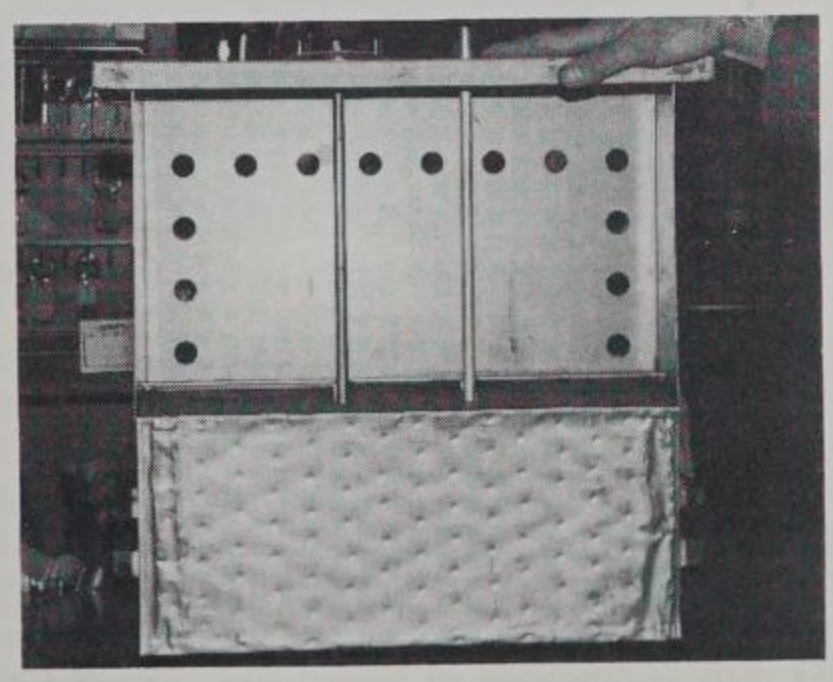
As Carl and I went through the front door of his shop, I saw it sitting on the counter, just as you can see it in photograph one. From the front the Norfolk is pretty plain-Jane-ish, isn't it? With an S&G MP dial and a simple L-handle, it really doesn't look like much at first glance. Remember what Mama said about judging a book by its cover? Well the same lesson holds true here, as we shall soon see.



1. The front of a Norfolk GSA file.

In photograph two you can see that something is radically different about the Norfolk. With the drawer standing up, giving us, in effect, a top view, we can see a very long spindle and very long handle shaft running the length of the drawer.

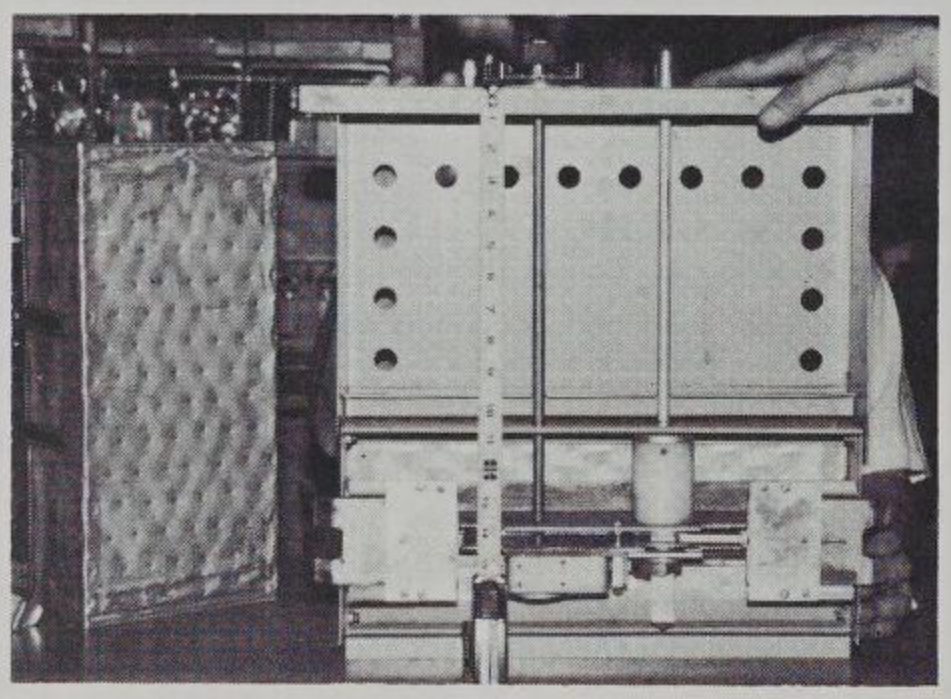
In photograph three, with the silver shroud, or cover plate removed, we see a very unusual set-up. The combination lock sits clear in the back of the drawer—the spindle is



2. From a top view, notice the long spindle and long handle shaft.

almost 16″ long! Imagine not knowing this, and attempting to penetrate one of these little rascals. There would be some heavy duty head scratching going on, for sure.

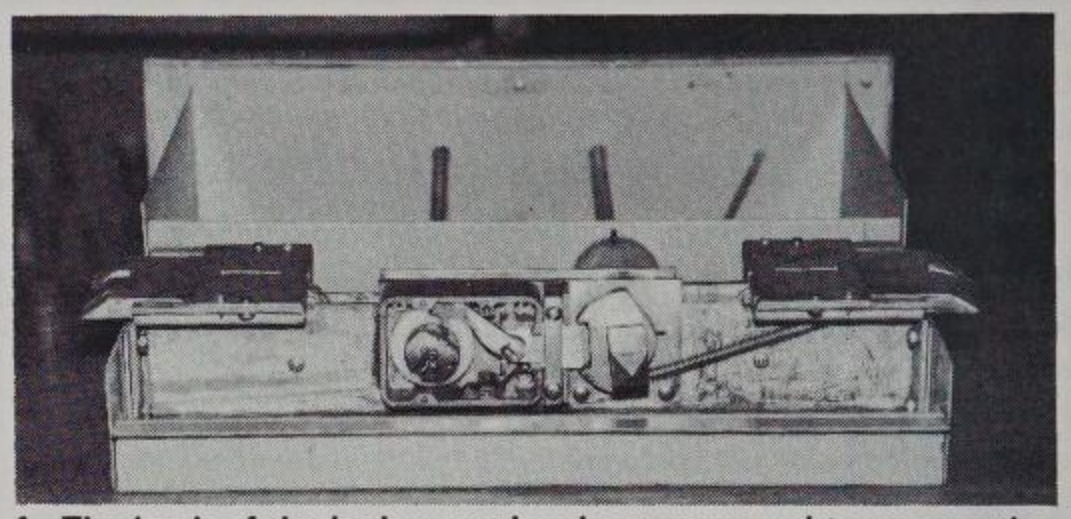
But the distance from the front of the drawer to the lock isn't even the most unusual feature of the Norfolk. Get this: the silver shroud that was removed in the last photo is filled, yes filled, with *ink*! That's right; according to Mr. Clintron, who has probably opened more Norfolks than anybody alive, there is absolutely no way to penetrate a Norfolk without setting off an ink explosion!



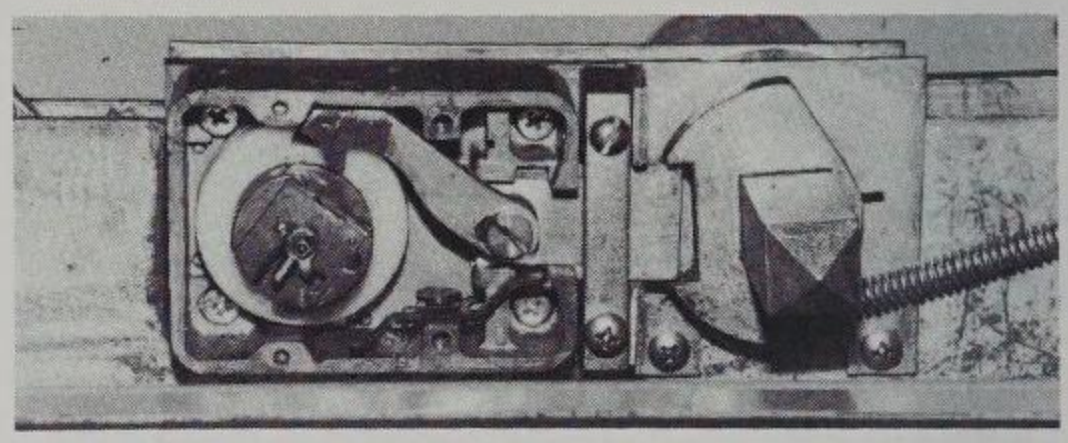
3. With the cover plate removed the 16″ long spindle is visible.

In photograph four we have the back of the drawer, with the back cover of the lock removed. The 8400 series lock is mounted RH.

In photograph five we have a close-up of the most popular Group 1 lock ever made. In government products it rules almost unchallenged. In the Norfolk, I'll bet it drove many a safeman to drink.



4. The back of the lock cover has been removed to expose the 8400 lock.



5. Close-up of the popular Group 1 lock.

As you can see, I spent the evening with Carl and the Norfolk. When I got back, the pizza was cold, and I had forgotten the scissors. But everything was cool. The shredder had come back on line during my absence, and Fawn nuked the pizza. Just another day in the life of a super spy. ■

A few years later, Carl and I were engaged in a serious battle with another fellow for the lead in a super hot project. But we both lost. Pierce Brosnan won. Hey, what does Pierce have that Carl and I lack, other than a cute accent?

Safe Opening Fiesta

"On this safe, the very best spot to aim for through the door is the slot in the cam plate that the relocker travels in. We went for it."

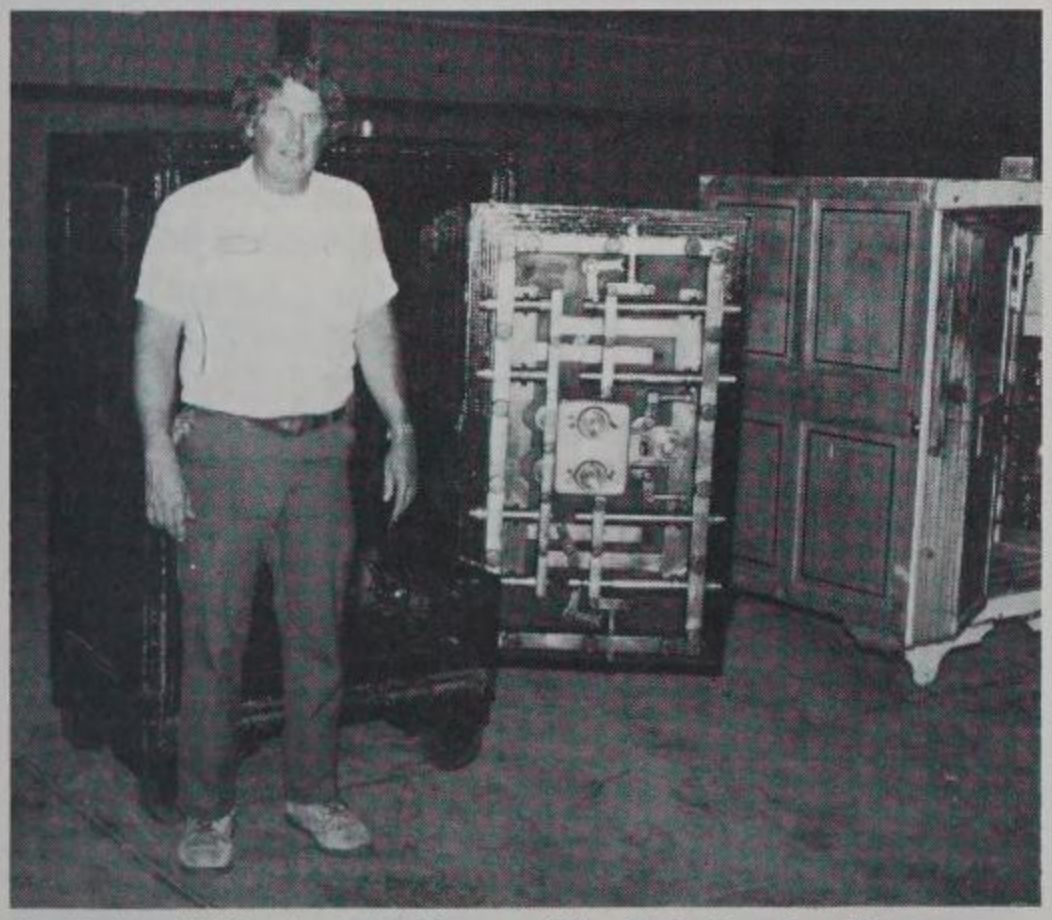
by Dave McOmie

Safecrackers International and yours truly are on the road again. In upcoming months I will be bringing you up to date on our coast to coast excursions. This month will be devoted to the Safe Opening Fiesta we held in Kansas City.

Our liaison in the Royal's home town was Rollin Gilliland, pictured in photograph one standing beside a gorgeous Herring with a push-pull double-dial Linus Yale lock.

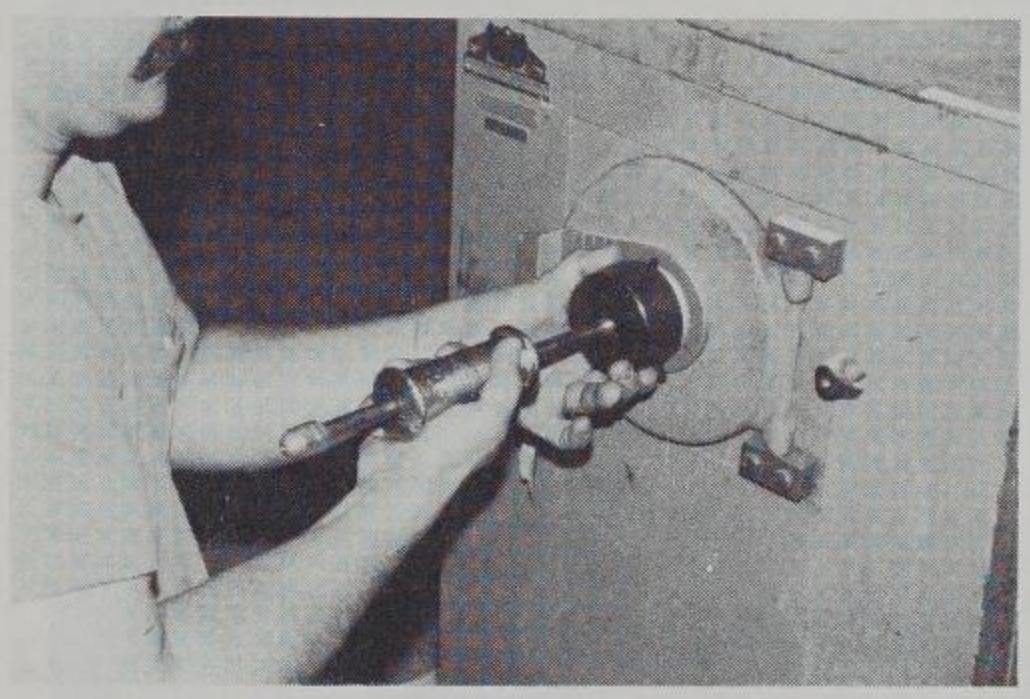
Rollin and Bob Taylor (President of Safecrackers International) rounded up a room full of safes; Kenton Supply graciously provided us with a warehouse to work in; all that remained to be done was for us to get cracking.

And a cracking we went. We opened the following: Diebold fire safe, Montgomery-Ward (Meilink) fire safe, Mosler X-60, Major square door, Diebold tri-bolt round door, Diebold TL-15 round door, Major TL-15, Guardian round door, Cary fire safe, 3 GSA security files, Fichet-Bauche Chambord TRTL-30×6, Hall's fire safe, Diebold jeweler's chest, Diebold banker's safe, Victor Cannonball, and several unidentifiable (by me, anyway) round doors.



1. Rollin Gilliland of the Kansas City Safe Opening Fiesta.

In photograph two the dial is being pulled on the Diebold TL-15 tri-bolt round door. The puller is the standard puller available from Lockmasters, and it works well on these particular type of Diebold dials.



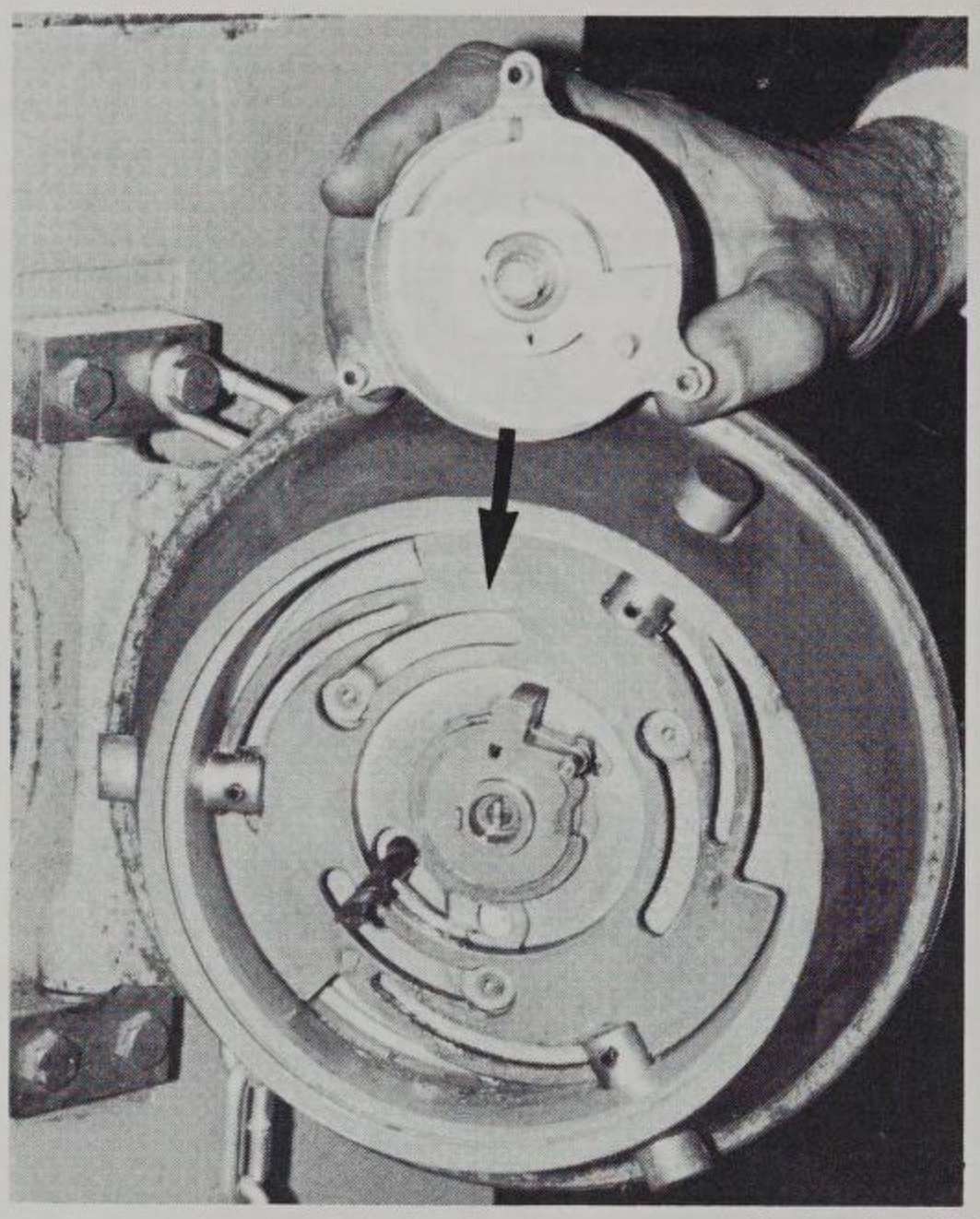
2. Pulling the dial on a Diebold TL-15 tri-bolt round door.

On this safe the very best spot to aim for through the door is the slot in the cam plate that the relocker travels in. In photograph three Tom is going for it with the industry standard Strong Arm drill rig.

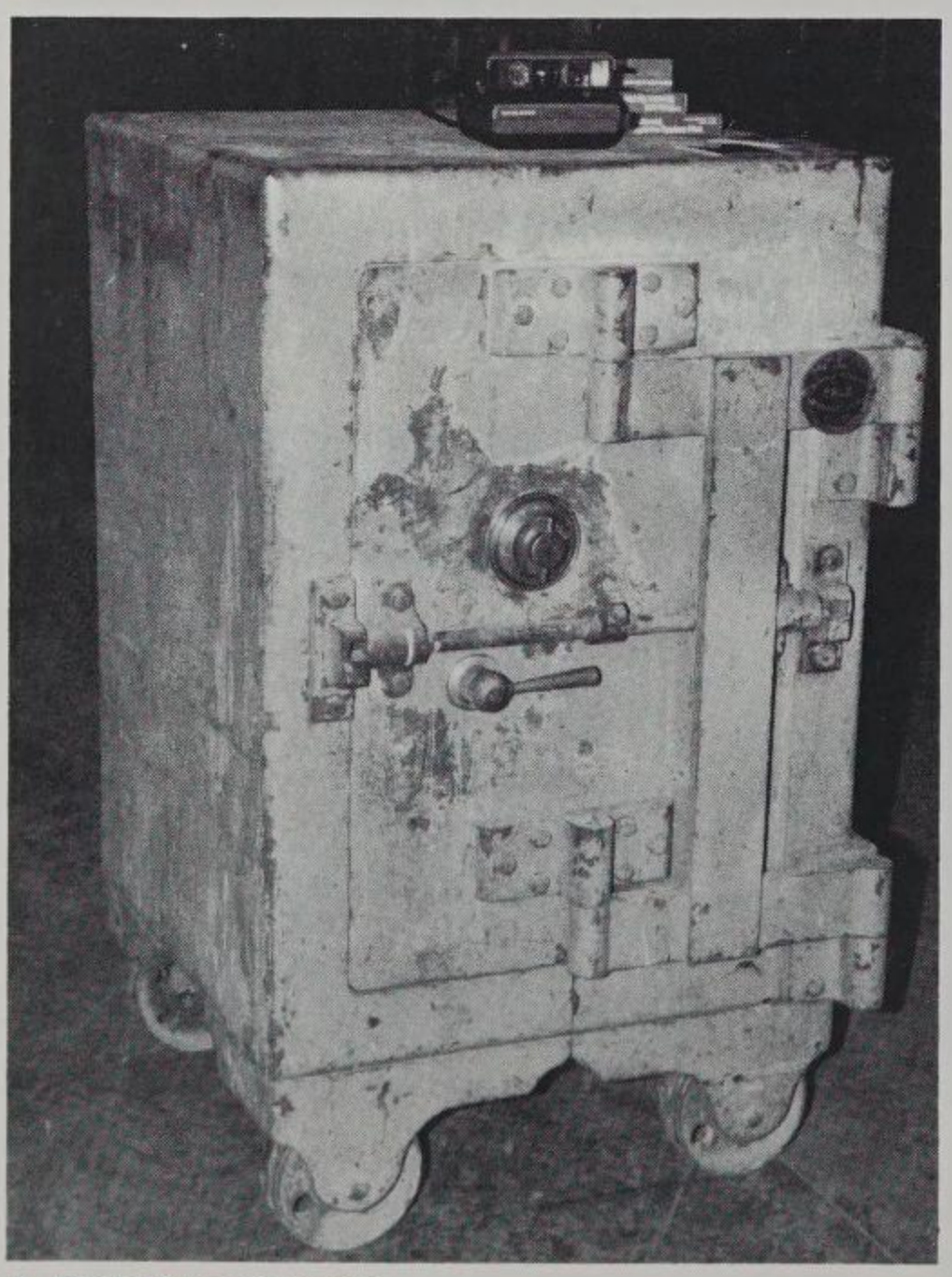
3. The Strong Arm drill rig attached to the Diebold.

With the hole completed, Tom inserts a scope into the hole, lines up the wheel gates and transfers them to the drop-in area—the safe is open. In photograph four we see the door with the back cover removed. The arrow is pointing to the drill bit sticking out of the hole that was used to open the safe. Pretty slick, eh?

One of the more interesting openings of the day was the Diebold banker's safe shown in photograph five. On a



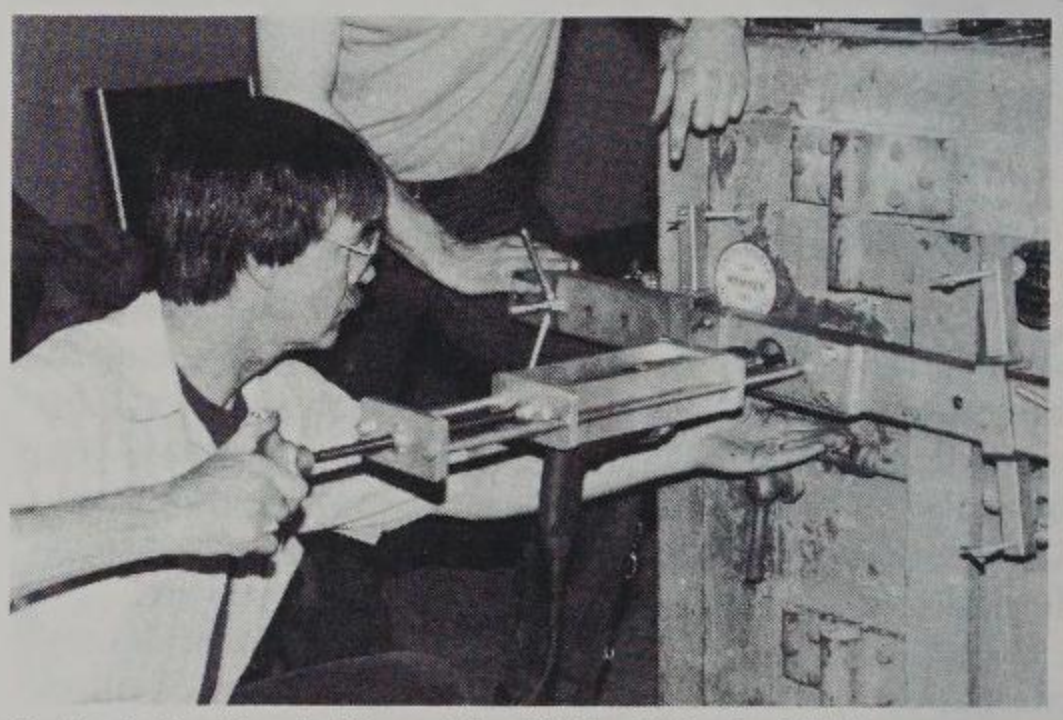
4. The safe door with the back cover removed. Notice the drill bit in the drill hole.



5. Diebold banker's safe.

banker's safe it can be a little tricky figuring out exactly where the lock is. Unlike the jeweler's chests which I have written extensively about, the lock on a banker's is not mounted on the horizontal centerline of the door. However, there are a few other clues we can use to arrive at an educated guess where the darned lock is located.

In photograph six, Arnie Foslien is using a Willie Schock drill rig and an educated guess as he puts a hole in the banker's safe. Our first hole was a scope hole that came in on the left side of the lock. We transferred and transferred and transferred to no avail. So we got mad and put a hole right at the fence. For some reason which I will never figure out, even with the gates lined up perfectly under the fence, the blasted thing refused to drop in. Finally we had to literally pry and bend the fence down into the gates. But still the safe would not open. Even though the fence was in the gates, we could not get the dial to retract the lockbolt. On a banker's safe this is especially important, because retracting the lockbolt is what engages the handle to the boltwork. But no matter what position we put the free spinning handle in, the lockbolt would not retract.



6. Arnie Foslien drilling with a Willie Schock drill rig.

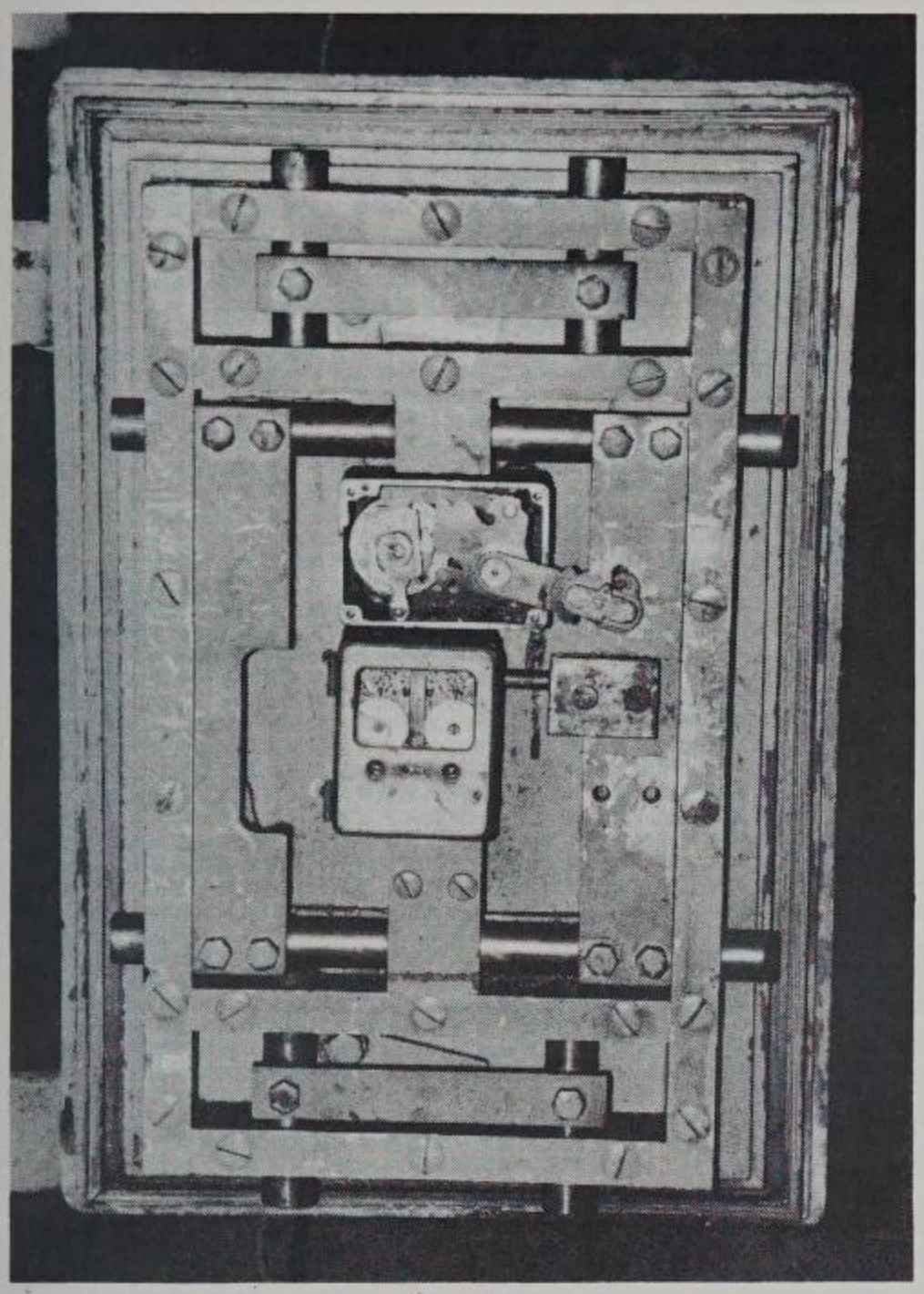
After several hours of fussing with the safe, Bob Taylor came over and suggested we take the handle off and put it back on 180 degrees off from where it was now, on the off-chance that someone, somewhere, someday had tampered with the handle. What a stupid idea. Why the heck would anyone have intentionally put the handle on incorrectly? This seemed to me to be ridiculous, as I could not figure out any plausible motive for anyone to sabotage an opening. But out of courtesy, I thought we should humor Bob and allow him to remove the handle and turn it around.

So Bob pulled out a screwdriver, undid the handle, rotated it 180 degrees, turned the dial and opened the safe. Evidently someone had indeed played a practical joke on us. Very funny. And Bob swears up and down it wasn't him.

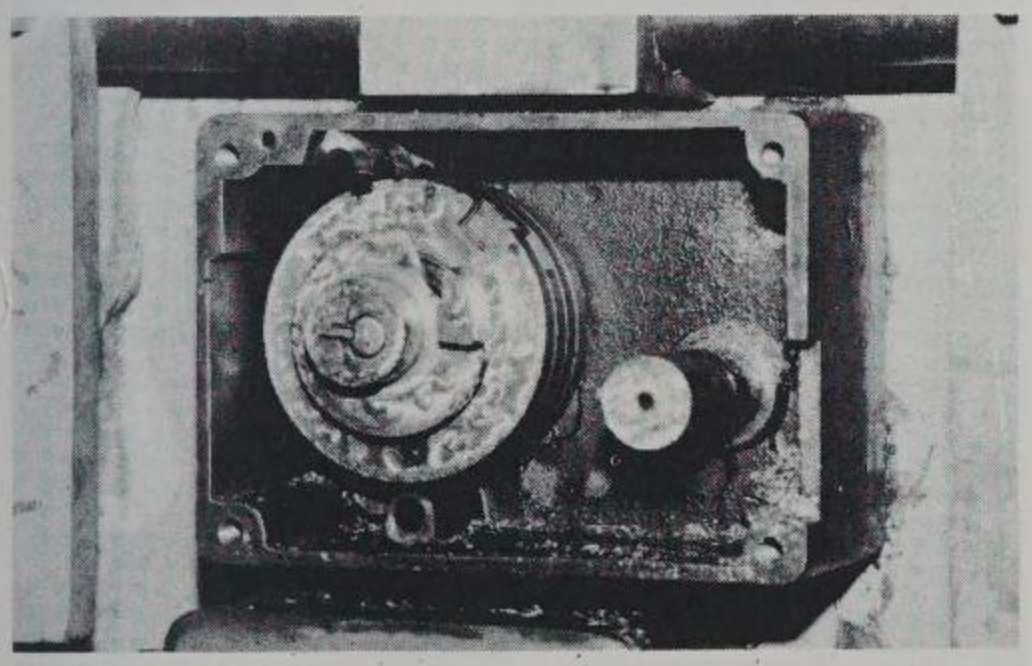
Photograph seven shows the inside of the banker's safe with the bolts in the extended or locked position. Notice the two-movement timelock just below the combination lock.

Photograph eight is a close-up of the lock, with the lever and lockbolt assembly removed. The drill bit sticking out shows where penetration was made at the fence.

After lunch a group of guys went to town on an unidentified round door. It was an interesting little door using an old Yale #0402. But the most interesting thing was the contents of the safe. Most of us become conditioned to never finding anything worthwhile inside, so we never have any expectations. Boy, were we surprised when the little round door popped open to find the items shown in photograph nine. Greenbacks and more greenbacks. And some 17 year old checks...I wonder if those people would write new ones?



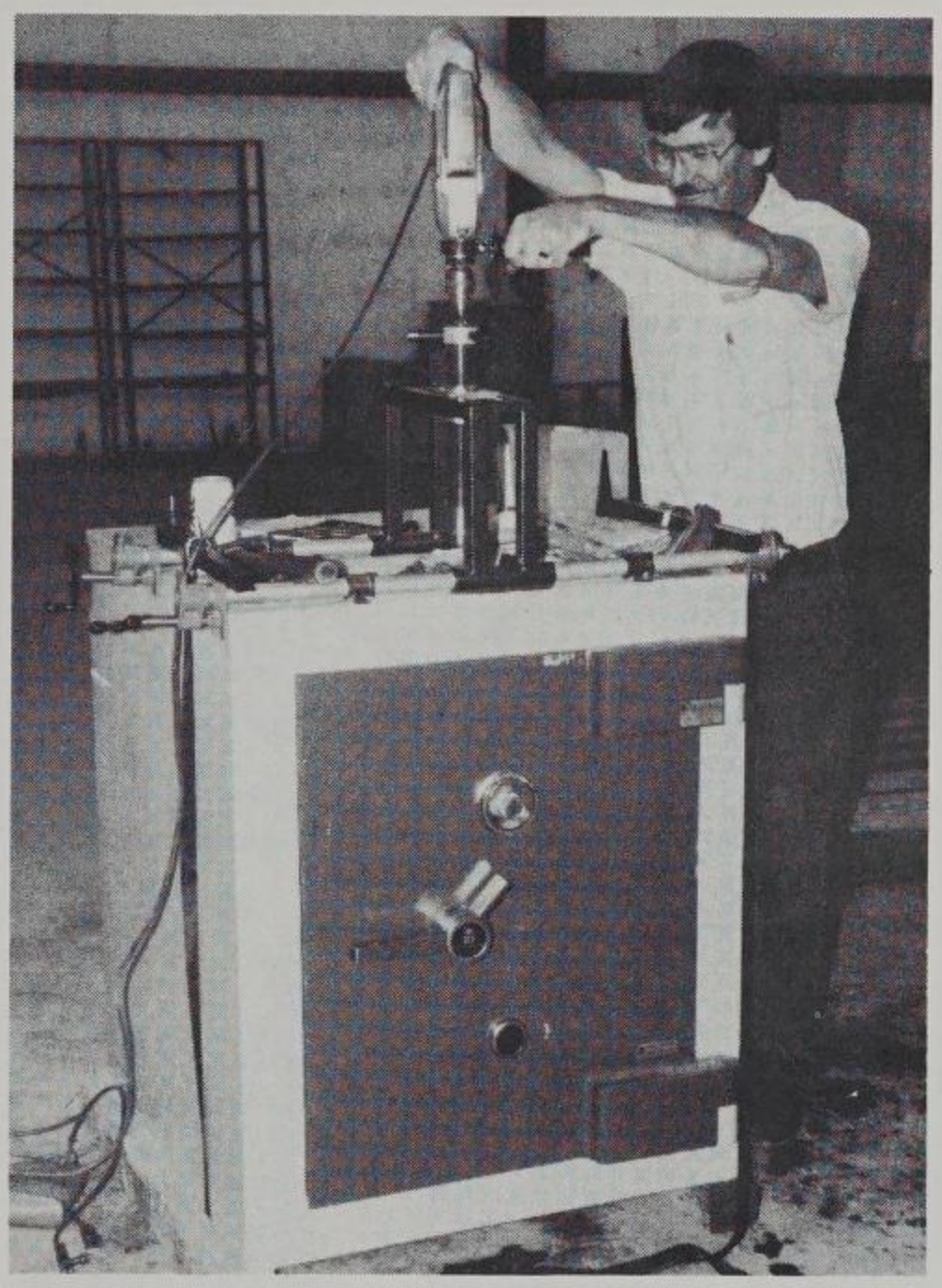
7. The inside of the banker's safe with the bolts extended.



8. Close-up of the banker's safe lock.

9. Unexpected contents of a safe opening.

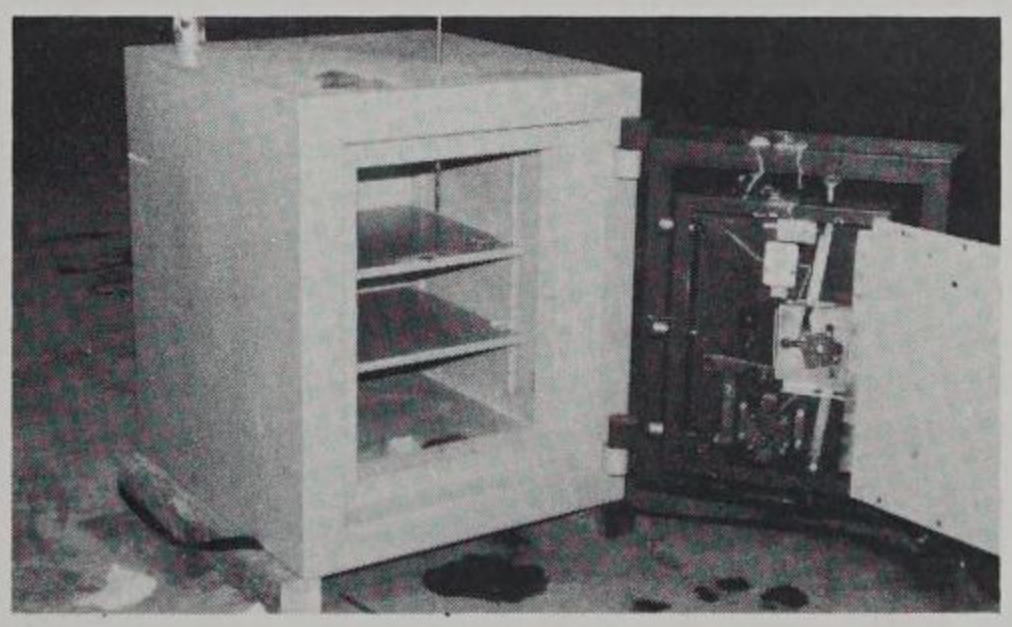
The grand finale was the opening of the Fichet-Bauche Chambord TRTL-15×6. The decision was to top drill it and scope the change hole with a long scope. In photograph 10 Arnie Foslien is handling the Magnum drill rig as it penetrates the top of the safe. After the hole was completed, we



10. Using a Magnum drill rig to penetrate the top of a Fichet-Bauche Chambord TRTL-15x6.

inserted one of my long Olympus scopes into the hole for a look around. It was perfect. The change hole was right there, just waiting for us to scope it, so we did.

Photograph 11 shows the inside of the Chambord with the locking bolts extended. Notice the Sargent and Greenleaf 8550 is mounted VD; the Monopole keylock is mounted VU. The block right above the combination lock is the glass activated relocker.



11. The inside of the Chambord door with locking bolts extended.

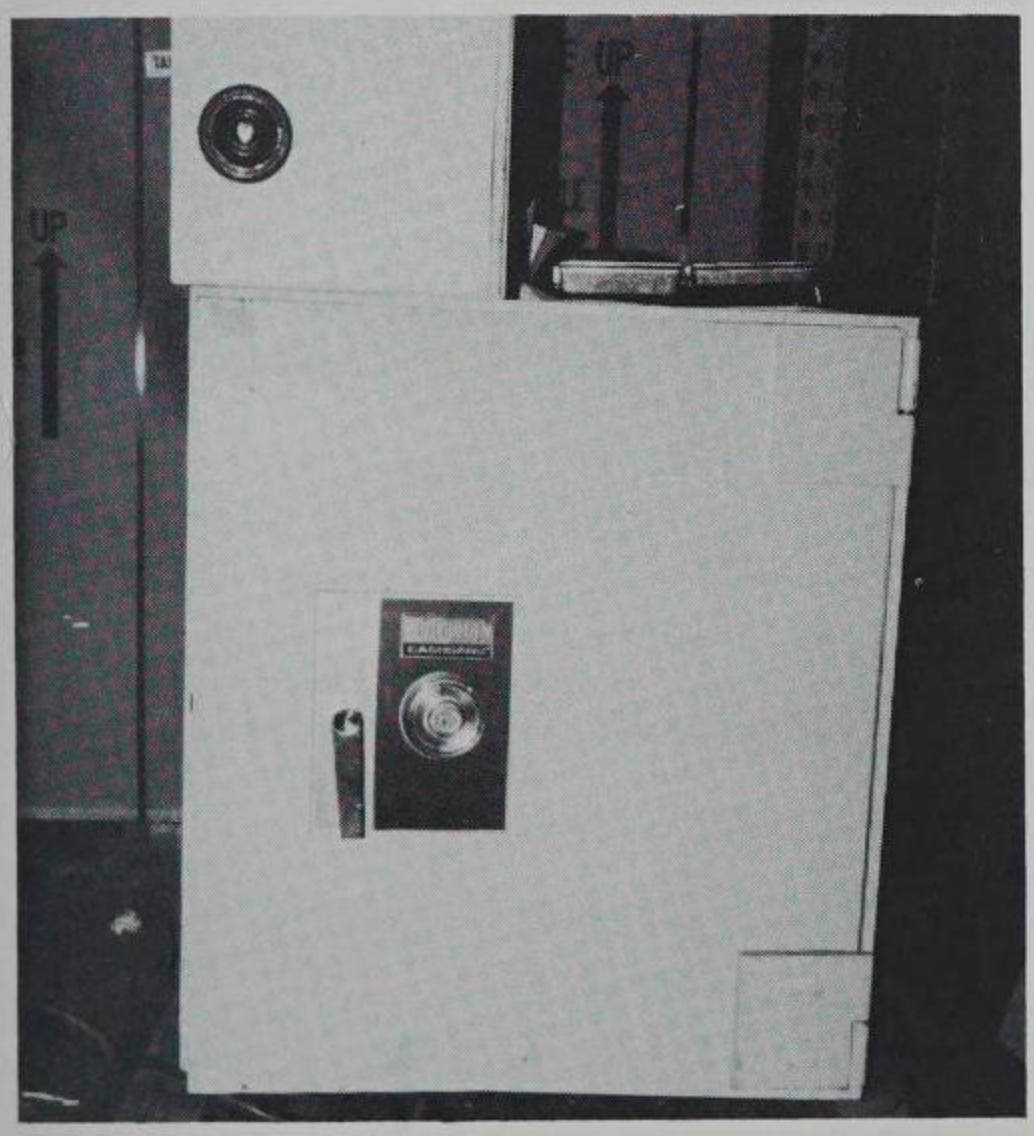
Well, that wraps up Kansas City. Once again, my thanks to Rollin Gilliland and Kenton Supply for all the help and support. Next month we go to San Francisco. Gosh, I hope the ground stays in one place. ■

Safecracking Spectacular

"Locksmiths and safemen from all over California came loaded for bear, ready to drill safes until the sun went down. That's just what we did."

by Dave McOmie

This month we traveled to the Golden Gate city of San Francisco. Bob Taylor from Safecrackers International, Gary Hane and Terry Andreason from Superior Safe Co., and I joined forces to throw the 1990 San Francisco Safecracking Spectacular. It was definitely spectacular. Locksmiths and safemen from all over California came loaded for bear, ready-to-drill safes, until the sun went down. That's exactly what we did. When all was said and

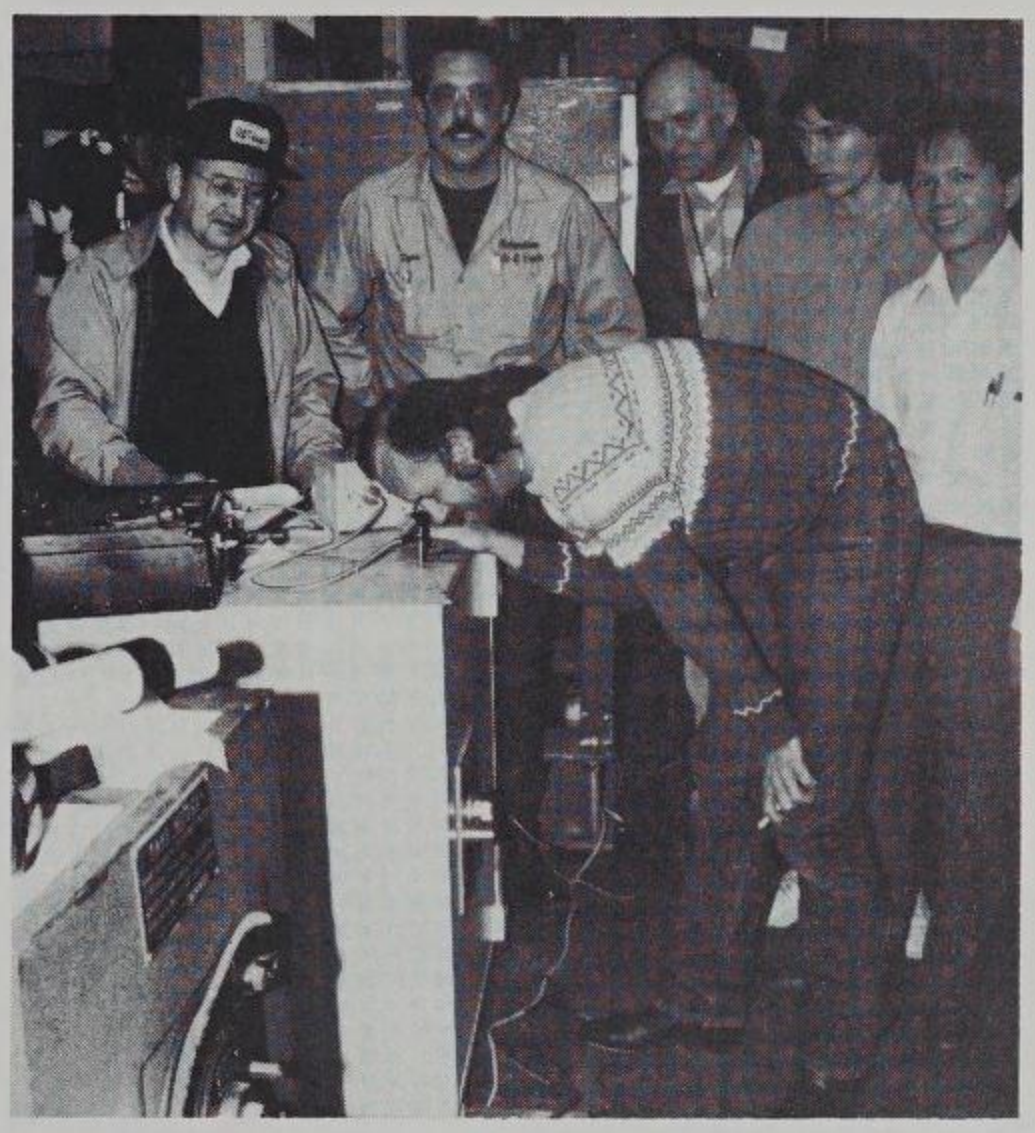


1. The Diebold Cashguard with a VD mounted lock.

done, more than 60 safe doors had swung open, most of them with one small clean hole.

I would like to share with you some of the slick openings we pulled off. The openings will be split in half between the June and July issues. Now, let's dive in.

Diebold "Cashguard's" label is used somewhat indiscriminately on many products. (*See photograph 1.*) I do not rely on the label to identify the door, but use the measurement from handle center to the edge of the door.



2. Safemen look at the wheels through a scope inserted into the safe.

top of the body, penetrating the cover plate and putting a ¼" hole in the corner of the lock.

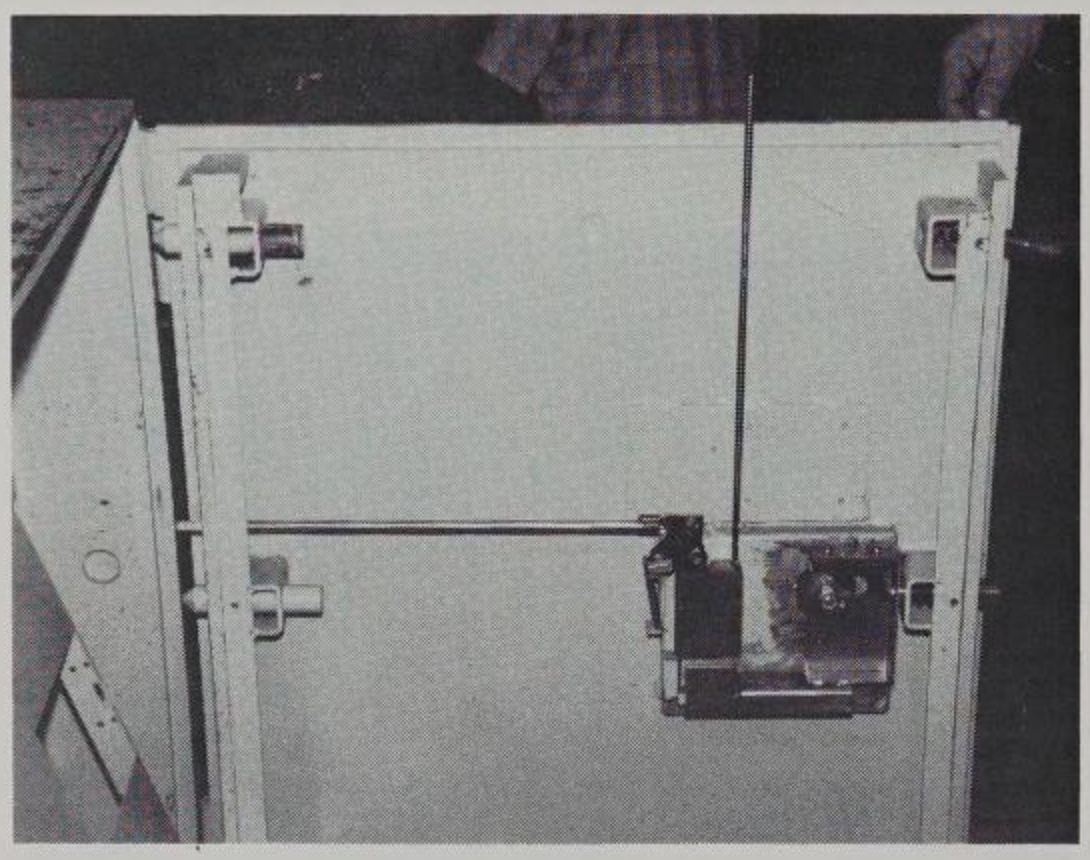
In photograph two, they are taking turns looking at the safe's wheels through the long scope. From here it was a simple matter of transferring the numbers over to the drop-in area to open the safe. Sometimes this is easier said than done. For whatever reason, it was a bit of a pain, but they got it.

Where the drill bit penetrated the lock case is an excellent place to enter the case. (*See photograph 3.*) If you aim for the center of the wheel pack, you run the risk of hitting the wheels with a drill bit. This is a nightmare when you tie two wheels together when attempting a side attack because it is difficult to overcome. If you aim for the corner of the case, the drill bit has very little chance of making contact with the wheels. It is also easier to scope the wheels when you are not right on top of them.

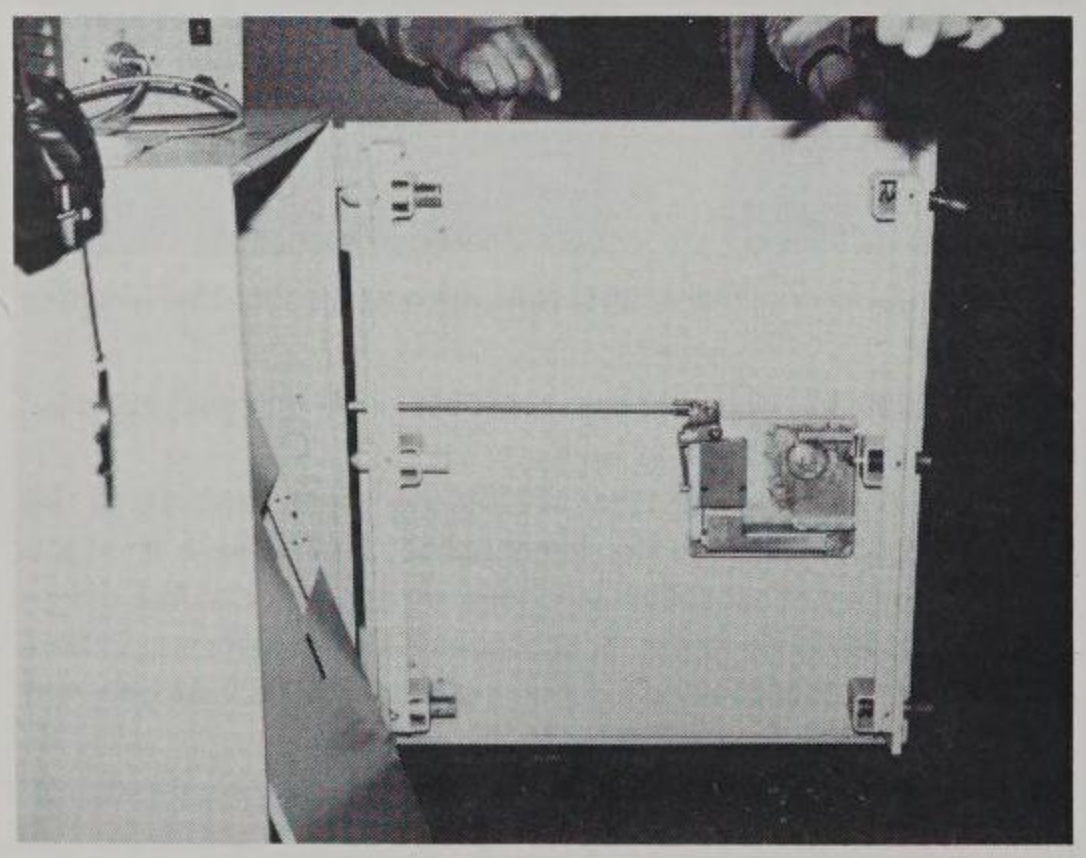
For the commercial market, Diebold produced two types of TL rated square door burglary resistive safes. The older version used a RH mounted lock with a flat locking bar instead of round locking bolts while the newer version uses a VD mounted lock with standard round locking bolts. The most reliable way to tell them apart is to measure the distance from handle center to the edge of the door. The old style doors have a handle to edge measurement of about 4".

The new style doors have a handle to edge measurement of a little over 6″.

The safe pictured has a handle to door edge measurement of slightly over 6″. We then knew it had a VD mounted lock. While Dave Richardson and his crew worked on the safe they decided on a top attack. They drilled a hole through the



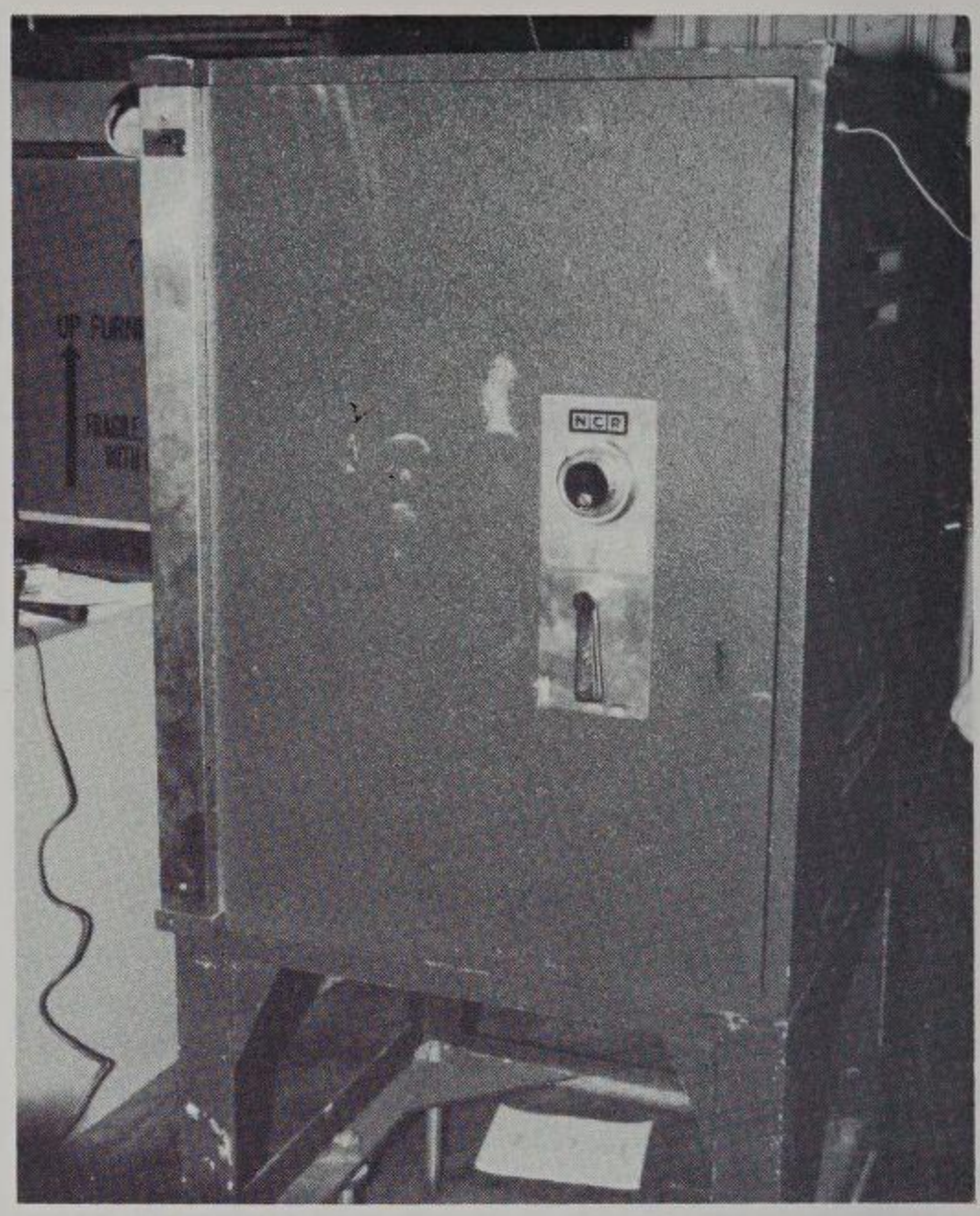
3. This is the point where the drill penetrated the lock case.



4. The entire door with locking bolts on the opening side.

The entire door with three locking bolts on the opening side is shown in photograph four. The spring loaded top and bottom bolts act as relockers when the large back cover is removed.

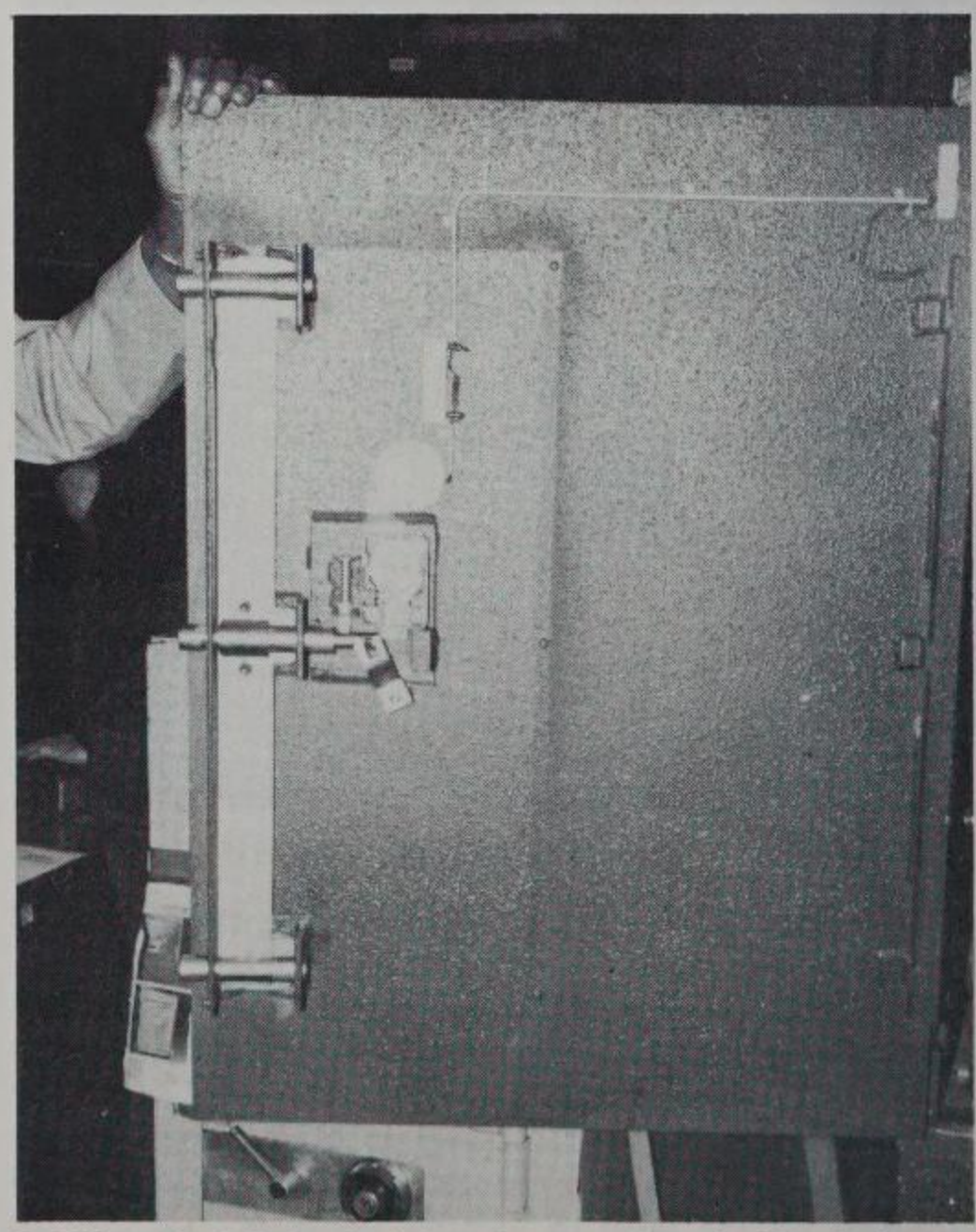
In photograph five, a NCR ATM made by my old friends at the Gary Safe Co. proved to be a problem. We thought we were going to be cool and pop a quick hole through the side to scope the lock. WRONG! I don't know what kind of concoction Stan Fuher used in the safes, but we agreed that it was some sort of work hardening material because it seemed to get harder and harder the more we drilled. Finally we popped a hole through the front and went for the fence.



5. The NCR ATM stopped an easy opening.

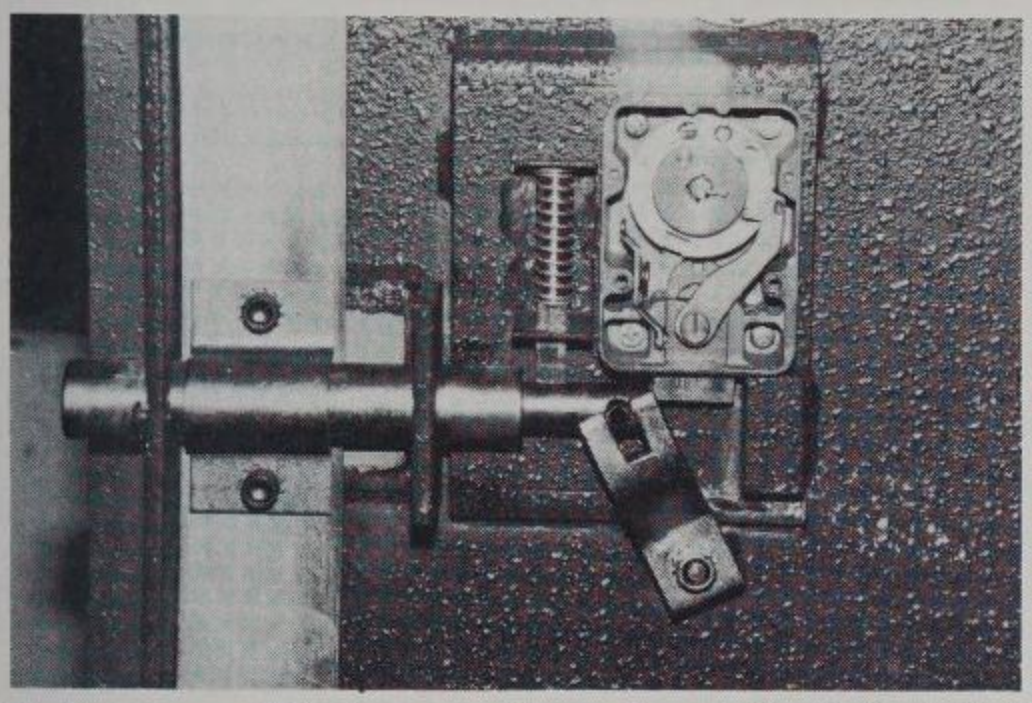
Going through the Maxalloy was no picnic either, but at least it worked.

With the left hand door open, you can see three locking bolts. (*See photograph 6.*) This is a simple but effective boltwork design copied by several other manufacturers. This proves imitation is indeed the highest form of flattery.



6. When the left handed door is open, three locking bolts are visible.

A close-up of the lock area is seen in photograph seven. The handle cam pulls back the center bolt, which pulls the bolt bar back. It has the other bolts connected to it. The relocker to the left of the lock is in the activated position. There is no bouncing this one open.



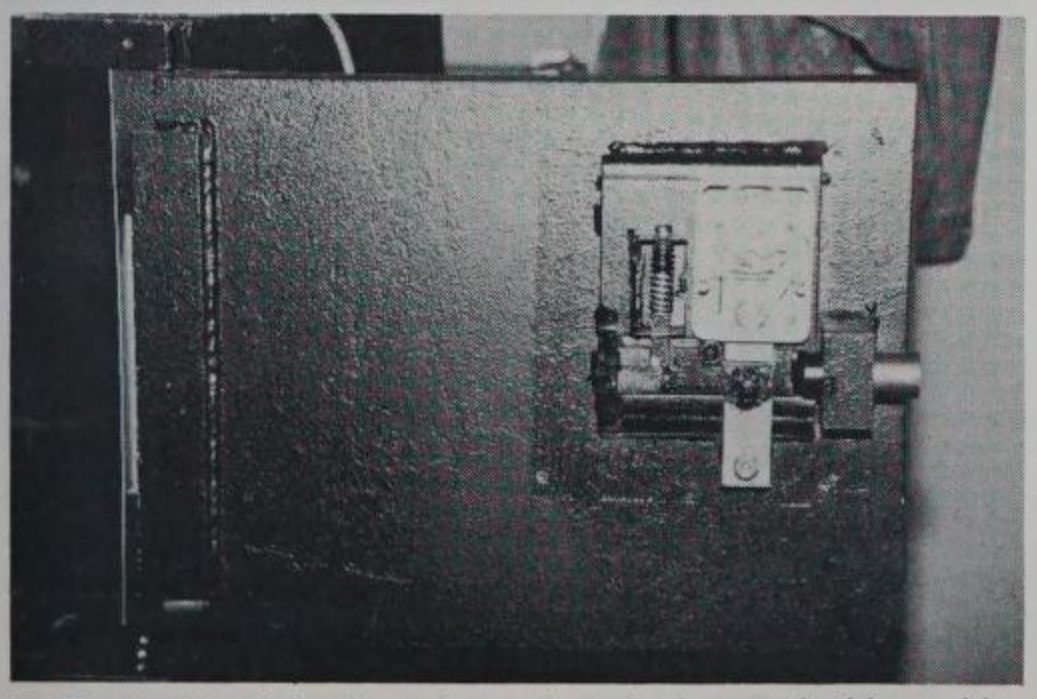
7. A close-up of the lock area shows the relocker to the left of the lock.

Charley is penetrating the side of a single bolt Gary TL-15 square door burglary safe in photograph eight. He is using the smallest electromagnetic drill press I have ever seen, weighing maybe 25 pounds.

8. Charley is penetrating the side of a single bolt Gary TL-15.

First the safe's body was penetrated, then the cover plate, and finally the lock. A scope was then inserted. When looking up, the fence and wheels could be seen. They were lined up and the safe was open.

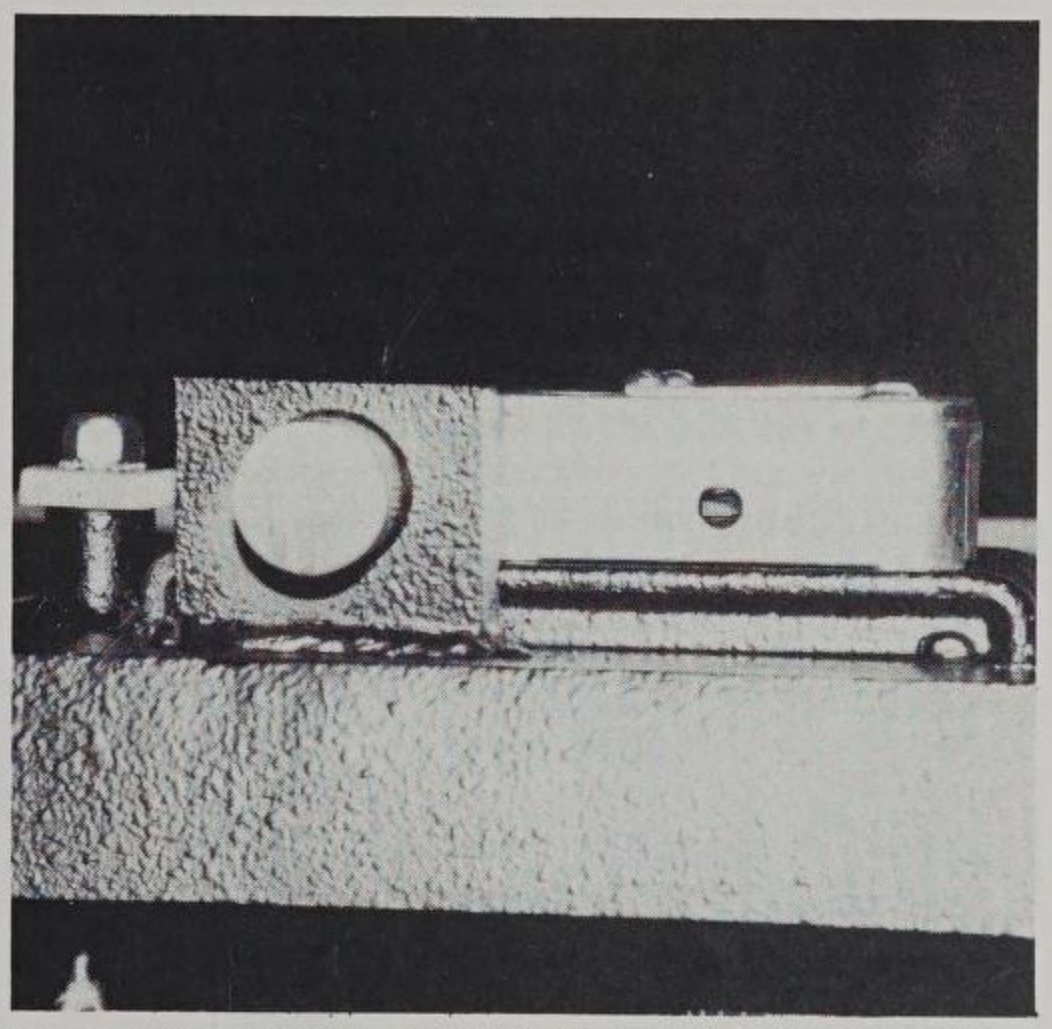
The inside of the door is shown in photograph nine.



9. The inside of the door shows the relocker on the hinge side.

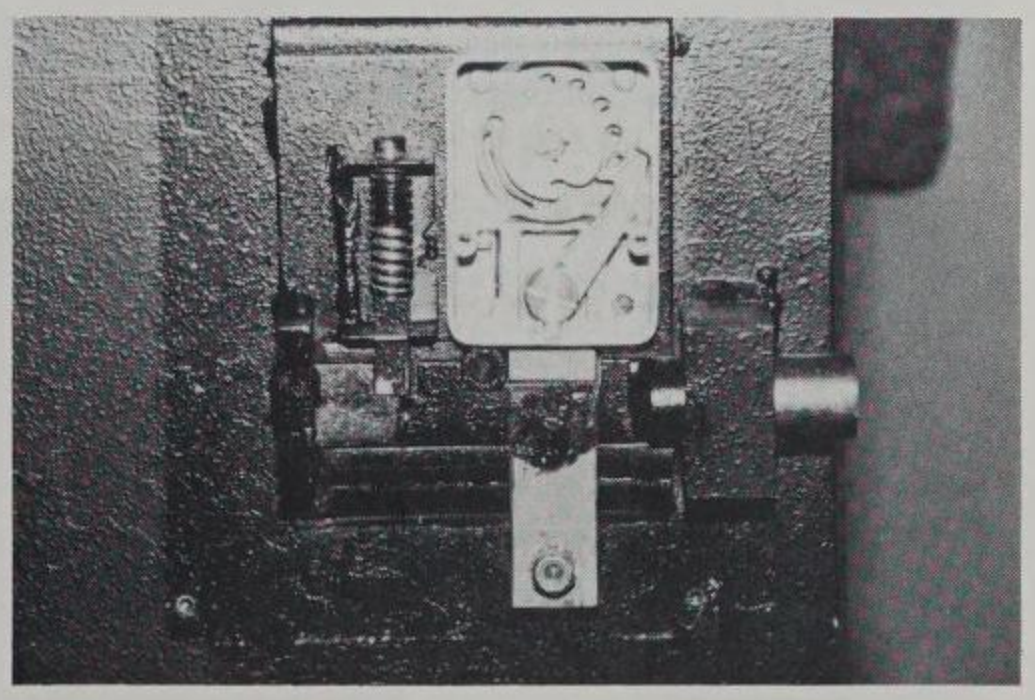
Notice the single locking bolt and also that the relocker is not on the opening side of the lock, but rather on the hinge side. Examining the door we can see why. There simply isn't room on the opening side of the lock for a relocker to be installed, unless a hole was drilled through the bolt guide, and a hole cut into the locking bolt. All of a sudden a simple safe begins to get unnecessarily complicated. The easiest answer was to move the relocker to the other side of the lock. This is important to remember as you encounter relocked Gary square door safes in the field.

Photograph 10 shows a side view of the door with the hole into the side of the lock that opened the safe. Perfection. For those of you who like this technique, the drill point is 2½" back, ½" below dial center. But you will need a good quality scope to implement this technique.



10. Side view of the door with the hole that opened the safe.

Photograph 11 shows us a close-up of an old LaGard 1800 lock area. I replace these with 3330s whenever possible. The relocker is in the activated position.



11. Close-up of an Old LaGard 1800 lock area.

That brings us up to lunch time. Next month we will see Dave Richardson and crew making another perfect side attack, this time on a dual-bolt Mosler lug door. Also Bob Volosing will be showing a Mosler-Brinks unit that he really does have the "Strong Arm." ■

Safes, Safes, and Safes!

"The guys put a hole through the steel and concrete, 5″ back and 1″ down, and we stuck my long Olympus 90 degree scope in. It was beautiful."

by Dave McOmie

This is a continuation of our Safecracking Spectacular last month in San Francisco. Dave Richardson and the gang tackled a size 2 new style Mosler lug door after we had a chat about various optional techniques and then decided to make a side penetration at an angle towards the front of the safe. The guys put a hole through the steel and concrete, 5″ back and 1″ down, and we stuck my long Olympus 90 degree scope in. It was beautiful.

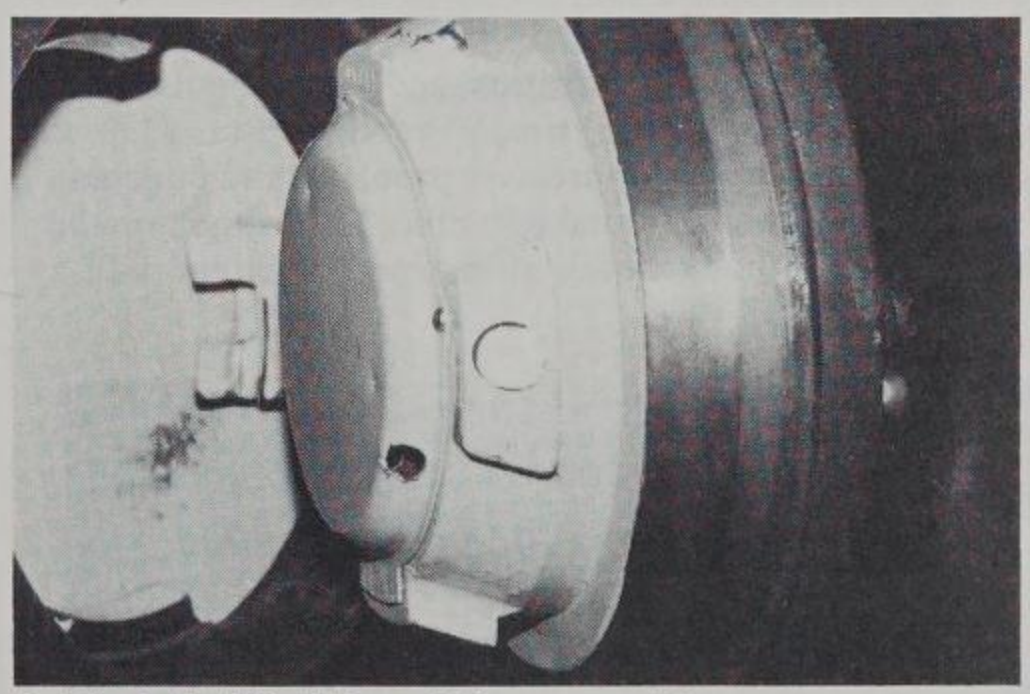
In photograph one, a member of the Richardson gang is peeking through the scope shortly before the safe opened. The interesting thing about this drill point, is that no transferring is required. You can see the wheels and the fence. Line the gates up under the fence, and the safe is wide open.

In photograph two, Dave Richardson smiles at success. Notice the drill bit showing the penetration and that the hole is below the center. This was done on purpose to give the scope some distance from the wheels. Sometimes, if you are too close, it is very difficult to see everything you need to see. By aiming for a spot a little away from the wheels, it is often easier to see all the wheels and the fence.

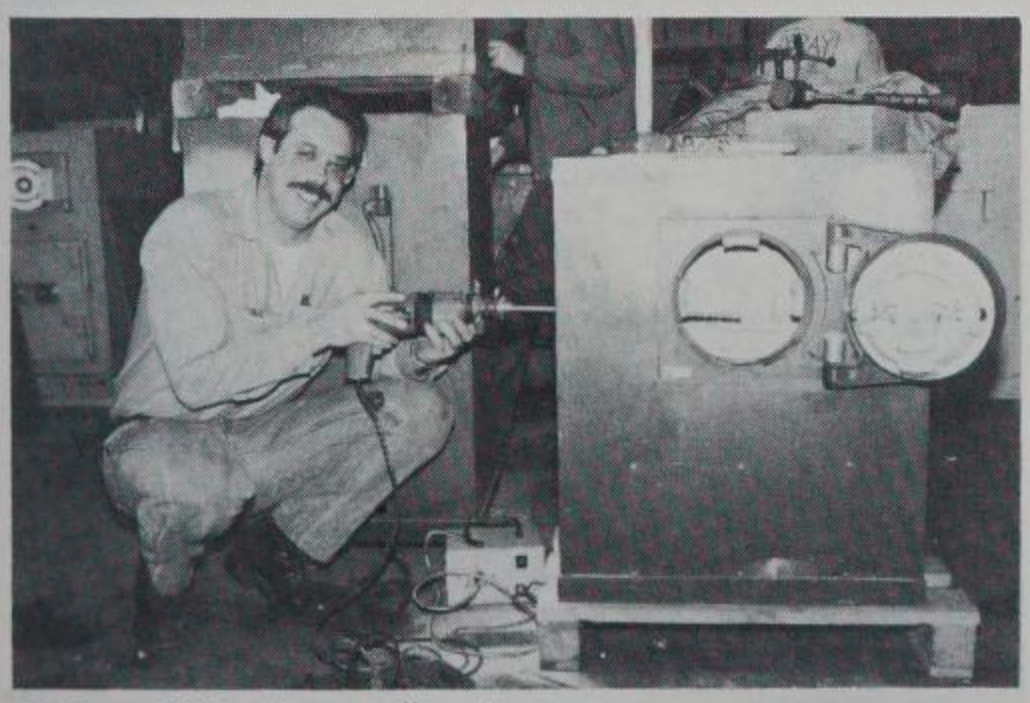
In photograph three, we can see the hole that was drilled through the coverplate and the plate sticking out from the door for our convenience. It is much easier to drill through, than it would be if it were flush with the door.

In photograph four, we can see the point of penetration in

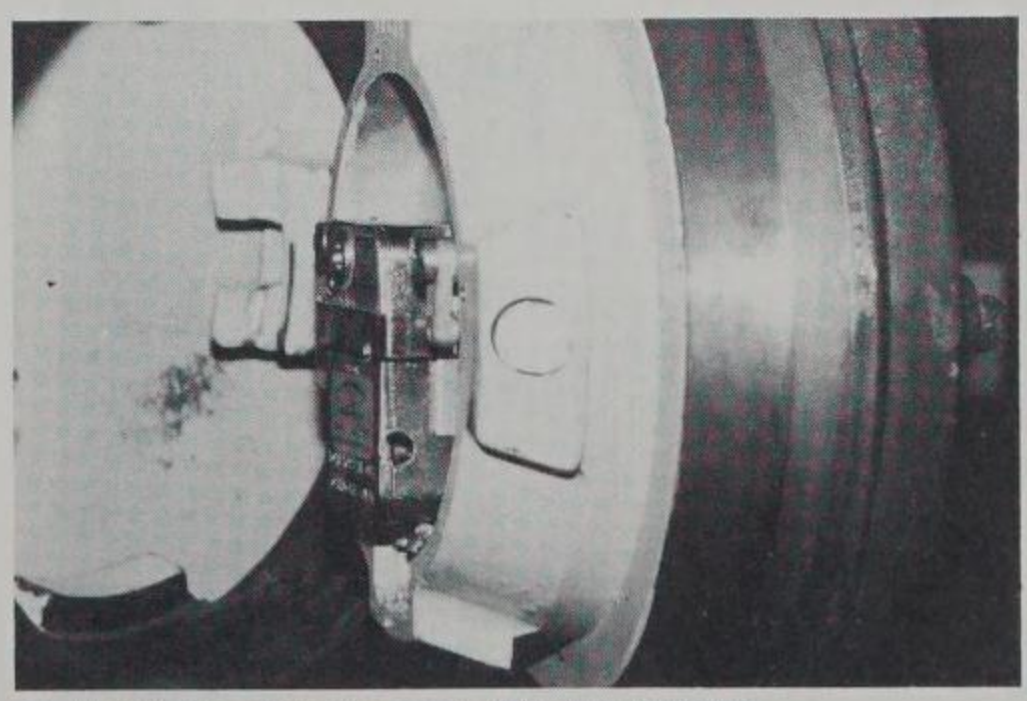
1. Peeking through the scope in the safe.



3. The hole drilled through the cover plate.



2. Dave Richardson smiles at success.



4. Point of penetration in the Mosler MR302.

the Mosler MR302. This spot is perfect for scoping the wheels under the fence.

The Safeguard fire safe shown in photograph five really gave us a tussle, it should not have, but did. We tried to get a little tricky here and got burnt. Here is what happened. We

5. The tough Safeguard fire safe.

decided to try a top penetration and merely punch the lockbolt in. This sounds simple enough. But 3330 is extremely resistant to end-pressure problems and punching attacks, which we soon found out. Since the lockbolt on the 3330 refused to budge, even after repeated blows with a sledge, we ended up going through the door for the relocker and punching the lockbolt back. It was messy, but we didn't expect such a problem. This is an example of where we got a little carried away when trying "different" techniques.

In photograph six, you can see the inside of this poor door. Above and to the left of the lock, you can see the relocker, which merely needs to be lifted up to be deactivated.

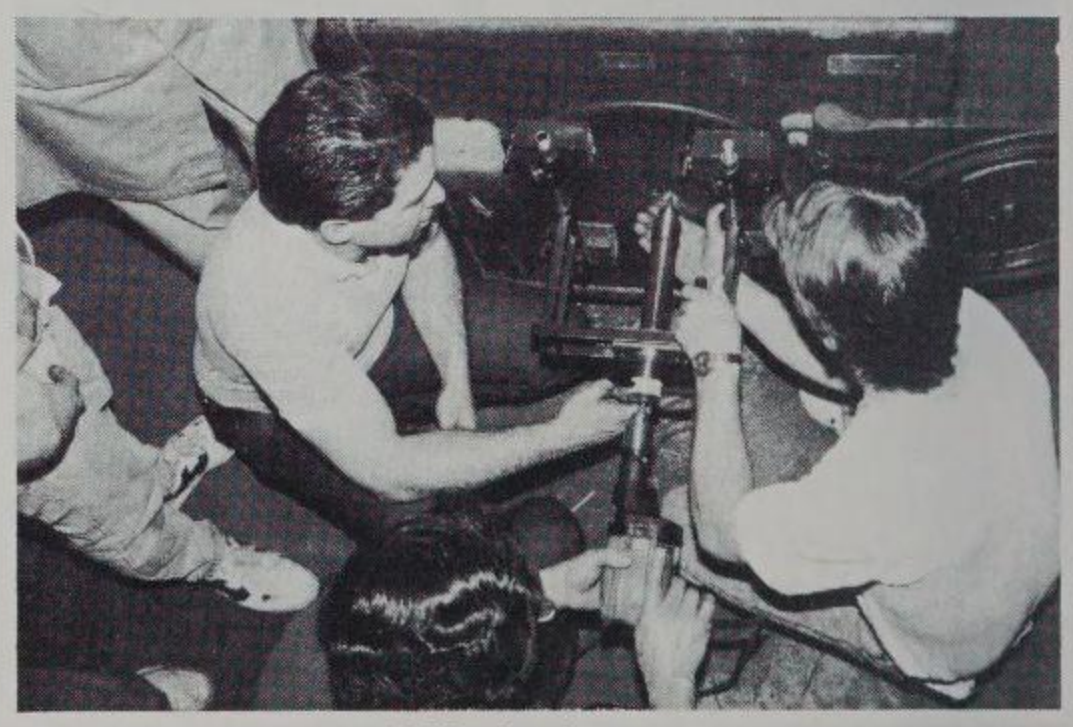
In photograph seven, the guys are attacking a very old Mosler lug door. The Magnum 457 is in place and functioning very well, and uses magnets to affix to the safe, that hold extremely well. Even with part of each magnet hanging over the edge of the door, not making contact, they held and never once popped loose. One of the guys was so impressed with the rig, that he bought mine.

The drill point used on this old style Mosler is my favorite drill point for old style doors: 34″ × 1⅛″. 34″ × 1¼″ also works like a dream and the thing about this drill point is that it will work on almost all of the old Mosler locks, no matter which way they are mounted. Try it the next time you run into an old style Mosler.

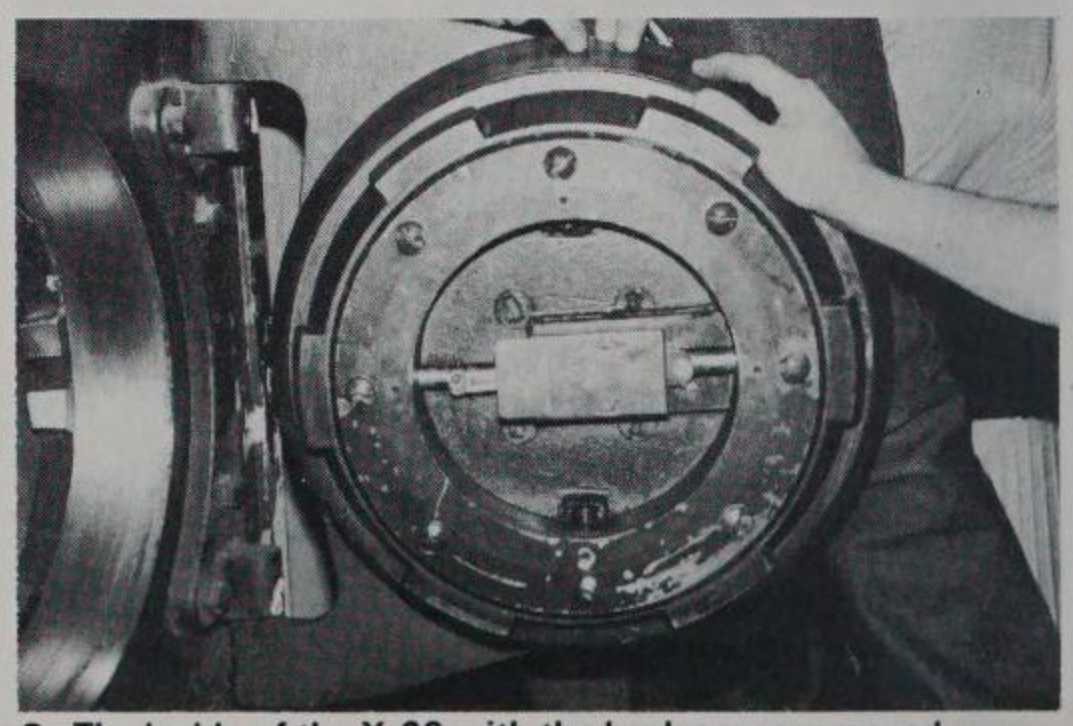
This door was an old X-60 with over 5″ to the lock. After the hole was completed, we scoped the wheels and transferred the numbers over to the drop-in point. But this was the tricky part, because the drop-in point ended up being 10 or 15 numbers away from where I thought it should be. When we got it open, I was surprised about the lock, which we will see shortly.

In photograph eight, we see the inside of the door with the back cover removed. The locking bolt is on the right and the relocking bolt is on the left. Notice the thermal link extending off the lock to the relocker.

6. The inside of the Safeguard's door.



7. Attacking a very old Mosler door.

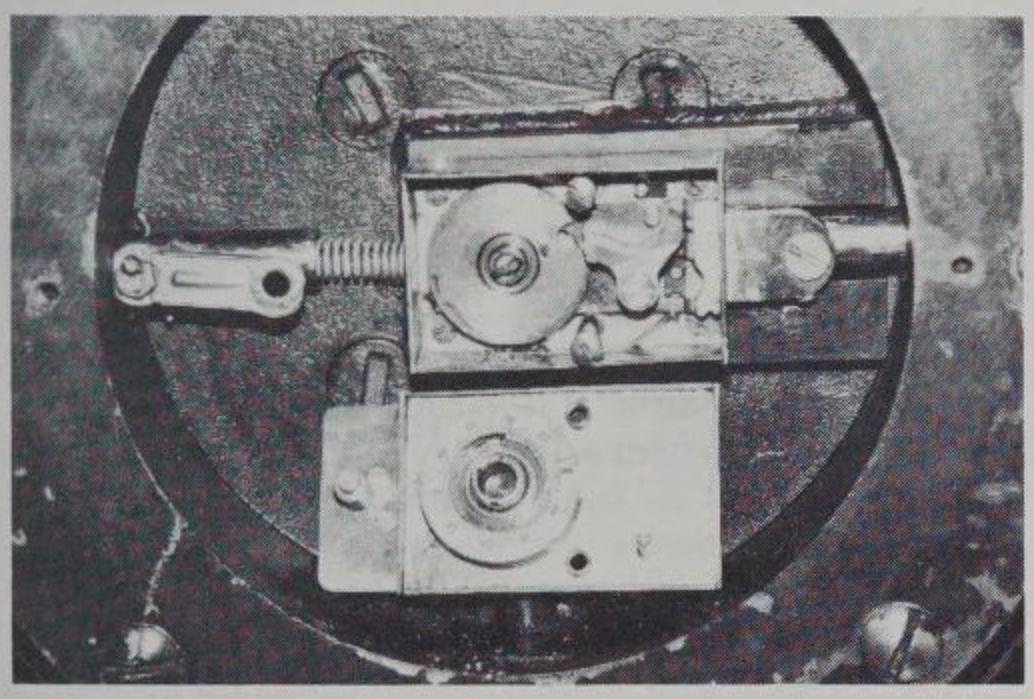


8. The inside of the X-60 with the back cover removed.

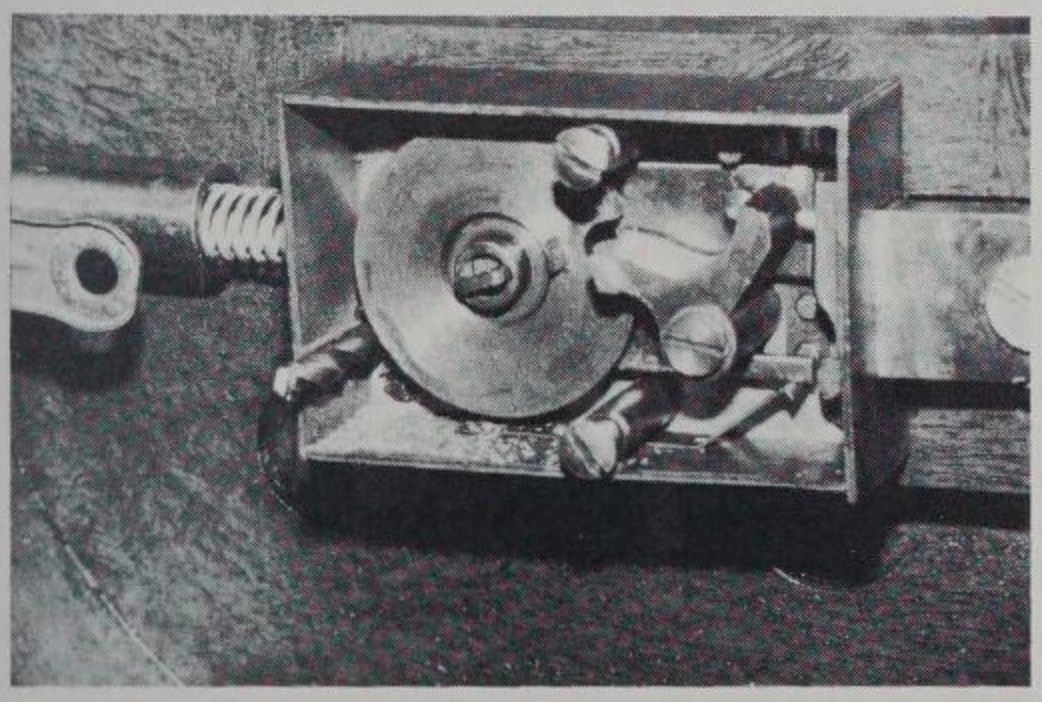
In photograph nine, the back cover of the lock has been removed. This is of an old Mosler #1, which is very similar to the Yale OC5. There are three standard size mesh change wheels, and the drop-in point is 80. Notice the peg on the back cover of the lock which acts as a relock detent. We can also see the spring pushing the relocker out. This is quite effective.

Photograph 10 shows a close-up view of the lock. Notice the drill bit sticking out of the hole that opened the safe. This is 34″ × 1⅛″.

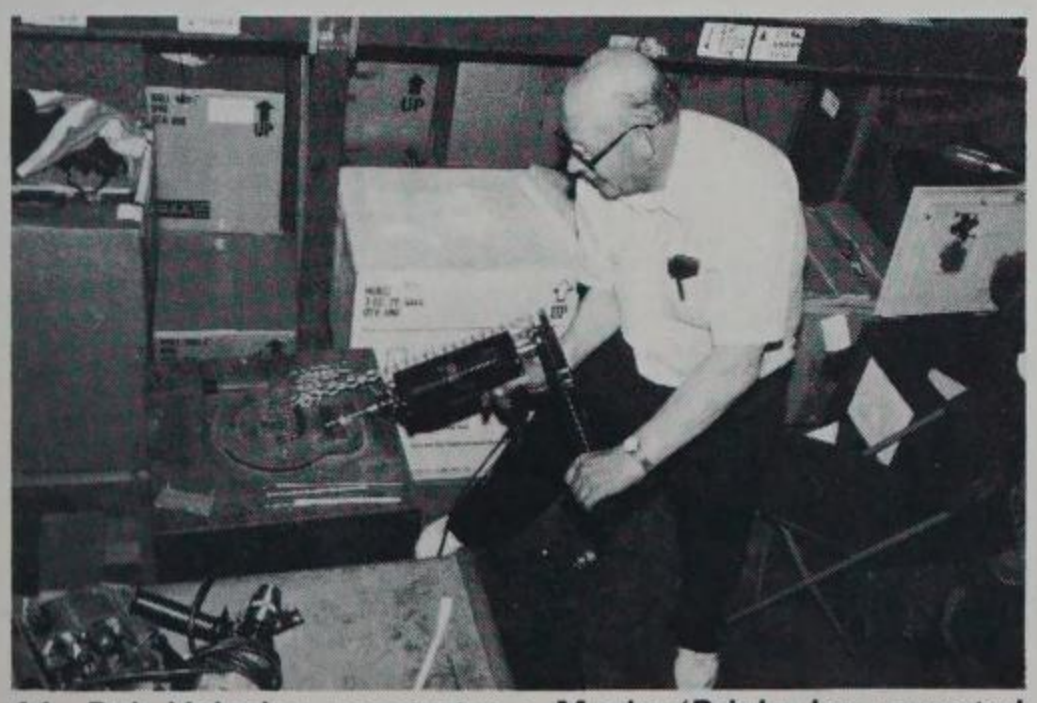
In photograph 11, one of my favorite people in the business is showing us picture-perfect form as he penetrates an old Mosler/Brinks key-operated safe. Bob Volosing, is making quick work out of this safe by using a Strong Arm drill rig and a drill bit.



9. The back cover of the lock removed.



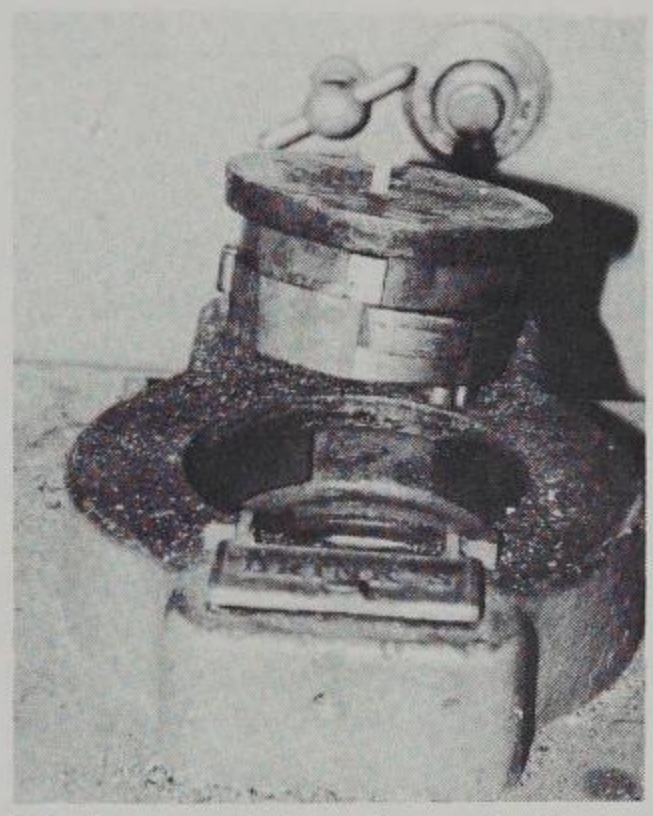
10. Close-up view of an old Mosler #1 lock.



11. Bob Volosing penetrates a Mosler/Brinks key-operated safe.

After he finished drilling, Bob inserted a punch into the hole. After hitting it, the Mosler/Brinks was open. Bob had punched the lockbolt darn near to China.

Photograph 12 shows the hole, the door, and the successful opening that capped off the San Francisco Fiesta.



12. A successful opening ends the San Francisco Fiesta.

Once again, my sincere thanks to Gary Hane for providing us with a first class location, to Terry Andreasan for all the assistance both before and during the Fiesta and to Dave Richardson for being an excellent co-instructor. ■

Traveling Safecracker

"Ding! went the bell, with lefts, rights and an occasional wrong being thrown every which way. Safes went down for the count."

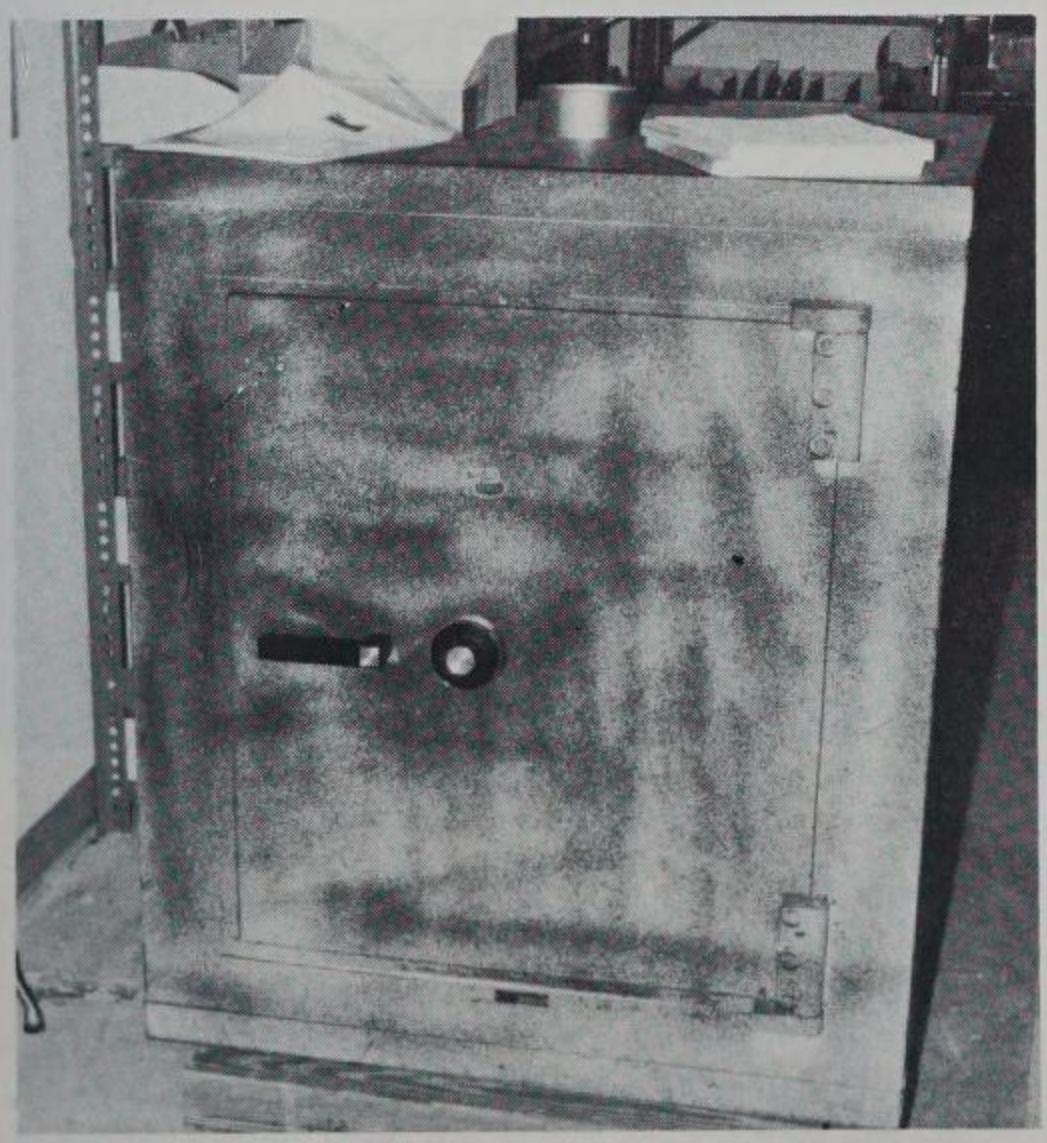
by Dave McOmie

The next stop for the traveling safecracker was Philadelphia. This time our host was the one and only Sal LaValle, President of Safes Unlimited in the greater Philadelphia area. Sal had rounded up a bunch of locked safes, and his showroom and warehouse were perfect for hosting a safecracking seminar.

When show time arrived, there were about 35 of us just waiting for the bell to ring. You know, all good prize fighters and safecrackers have that killer instinct of never say die.

Ding! went the bell, with lefts, rights and an occasional wrong being thrown every which way. The energy and intensity were beyond belief with sweat rolling off the prize drillers as, one by one, they put their opponents down for the count.

The remainder of this article will be devoted to examining some of the more interesting opponents faced by our champions. We will start with a Mosler TRTL-30 square door, then TL-15 Hamilton square door, and finish off with a Bischoff six-sided Robust TL-30.



1. A Mosler TRTL-30 square door money safe.

In photograph one is a large Mosler TRTL-30 square door money safe with the click-click of the dial telling us it has an MR302 on the inside. But which way is the lock mounted? When we are talking about the MR302, there are currently only two variations. The easiest way to tell them apart is to measure the distance from dial center to handle center and if the measurement is close to 4″, the MR302 is vertical up (VU). If the measurement is close to 6″, the MR302 is mounted right hand.

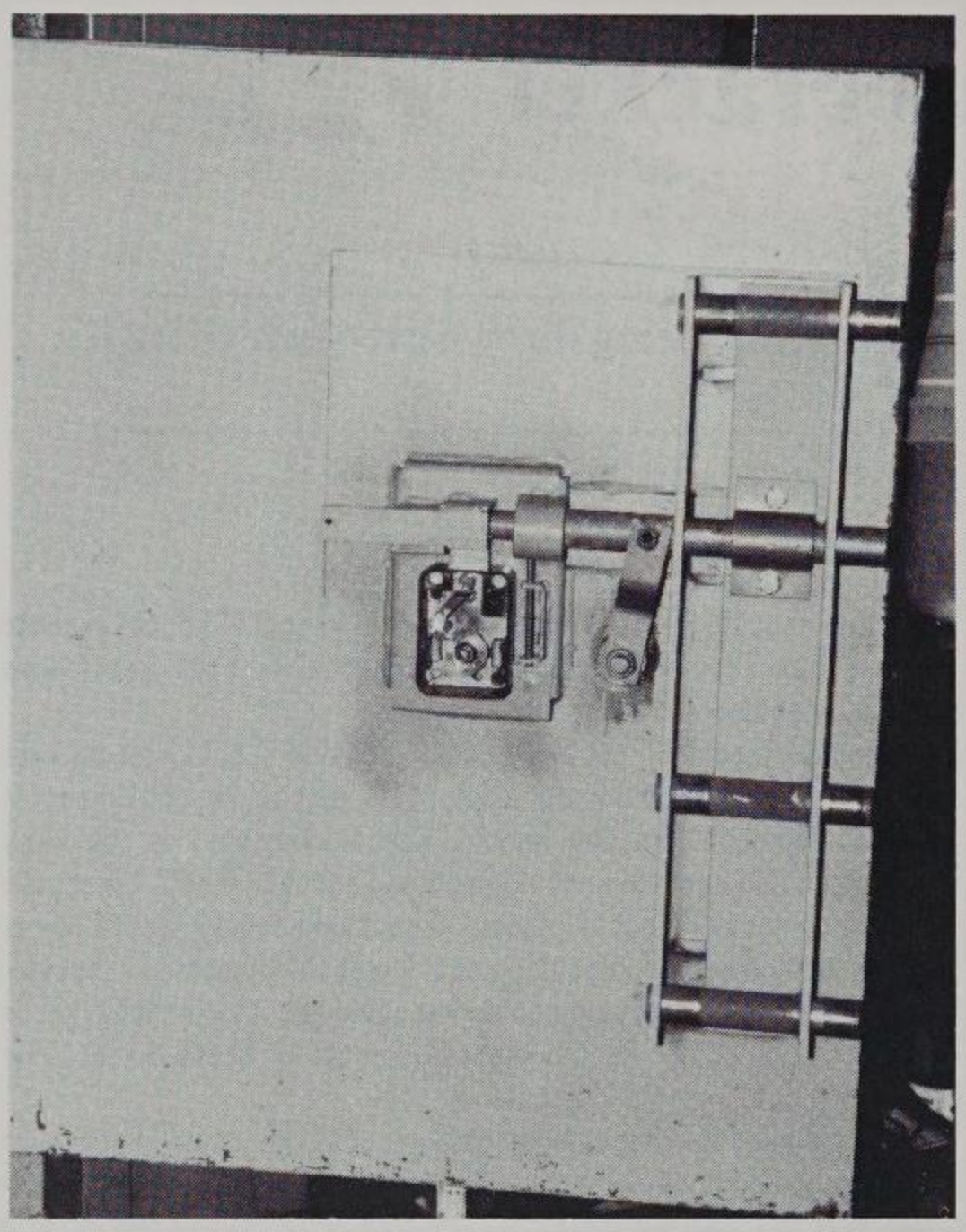
When Roy Watters measured out the safe, it turned out to have a handle to dial measurement of about 4″, so we knew the MR302 was mounted VU. After Roy pulled the plastic dial with a Lockmasters dial puller and removed the dial ring, the drill point was measured, double-checked and carefully marked at 10×1½″. This is the best spot to drill a scope hole into a 302 since the drill bit can enter the lockcase with no danger of damaging the lock. With a scope we watched gates line up right under the fence and it was a beautiful sight.

In photograph two, Roy is showing beautiful form as he enters the door with a Magnum drill rig. You may notice the odd looking magnets on the Magnum, belonging to Carlos Cintron, who is the first person, I know of, to install permanent magents on his Magnum. Lockmasters now has excellent magnets available on their new 457.

Once Roy got the hole through the door and into the lockcase, he inserted a borescope into the hole. He then lined up the gates directly under the fence and opened the safe.

In photograph three, the inside of the door with the back cover removed is shown. Visible in the picture are four

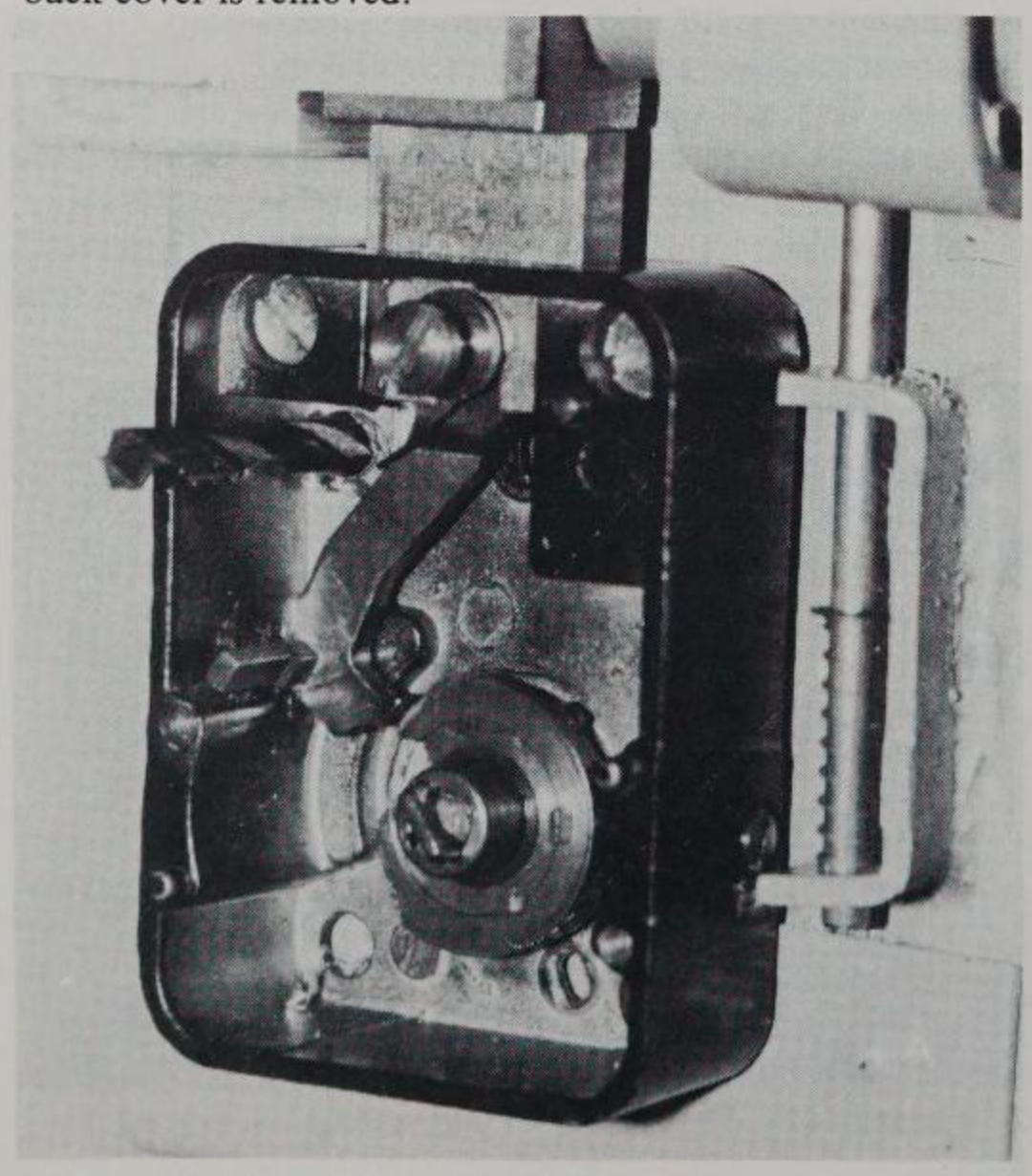
2. Roy enters the MR302's door with a magnum drill rig.



3. The inside of the 302 door.

locking bolts, the MR302 mounted VU, the inside handle cam assembly, and the relocker just to the left of the lockcase.

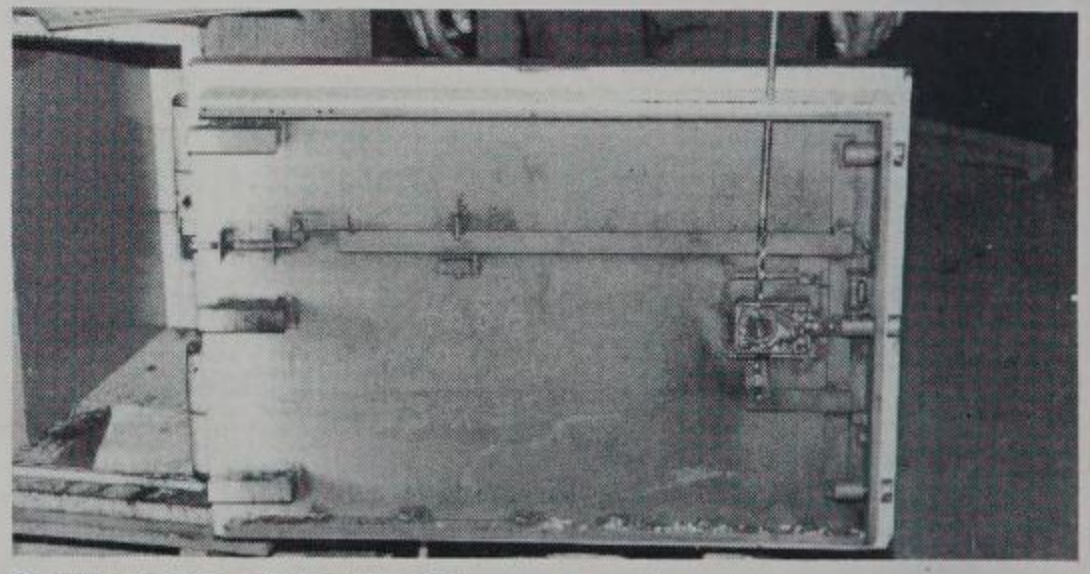
In photograph four, there is a close-up of the lock and relocker with the drill bit sticking out of the hole. Notice what a clean spot it is, away from any critical parts which could be damaged, but with a perfect view of the fence and wheels. In this photograph, the relocker to the left of the lock can be clearly seen. It is a simple spring-loaded pin that shoots up to deadlock the long bolt above the lock when the back cover is removed.



4. Close-up of the lock and relocker.

On the Hamilton square door shown in photograph five, using the knowledge that the S&G R6730 was mounted RH, we decided to try a top attack. After we got the hole through the body and the top of the door, we all peeked in to see if we were in business or not. The top of the lockcase was penetrated right next to the fence, and it was opened just before lunch.

5. A top attack on the Hamilton square door.



6. The inside of the Hamilton square door.

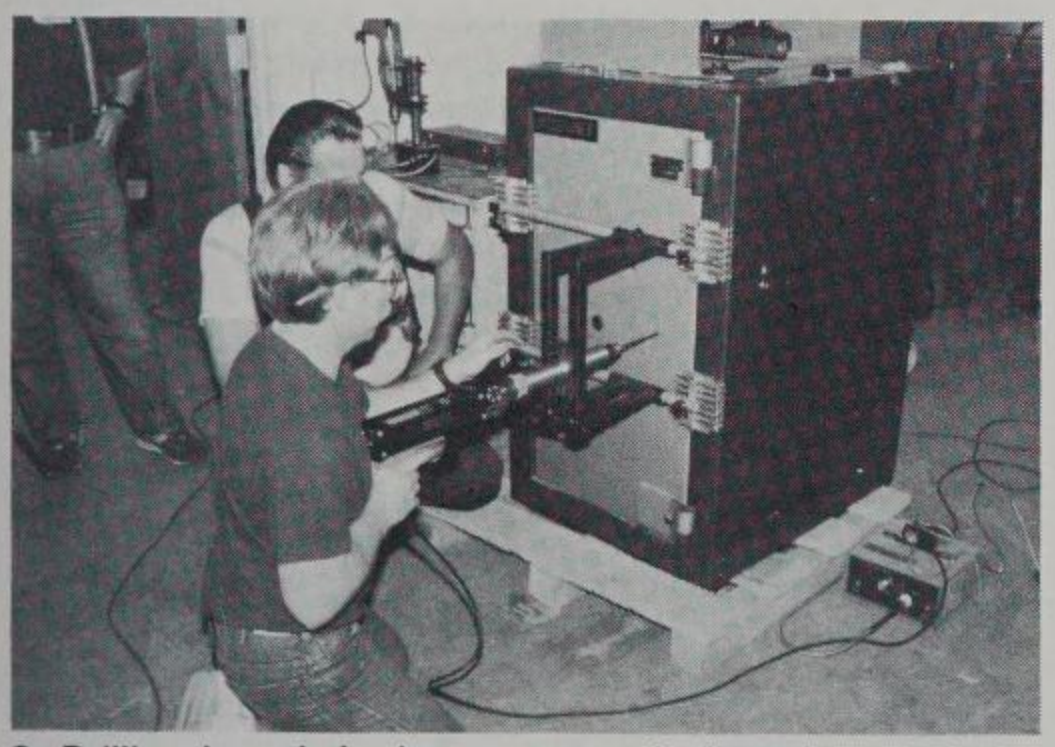
In photograph six, the inside of the door with the back panel removed can be seen. The long drill bit shows how the lock was entered and there are three locking bolts in an unusual arrangement. When the lockbolt is retracted, it carries the center bolt back with it, and at this point, the handle can be turned to retract the top and bottom bolts. It is definitely different.

After lunch, we sized up the most interesting component of the day, the six-sided Bischoff Robust TL-30 shown in

photograph seven. The Robust offers six-sided protection, a composite door and body, with a TL-30 rating.

The combination lock on a Robust is protected by glass, so we opted for a side attack to defeat it, and since the Giant Safe Co. keylock is not protected by glass, we decided to drill right through the door to remove the fence, or stump, for the lock.

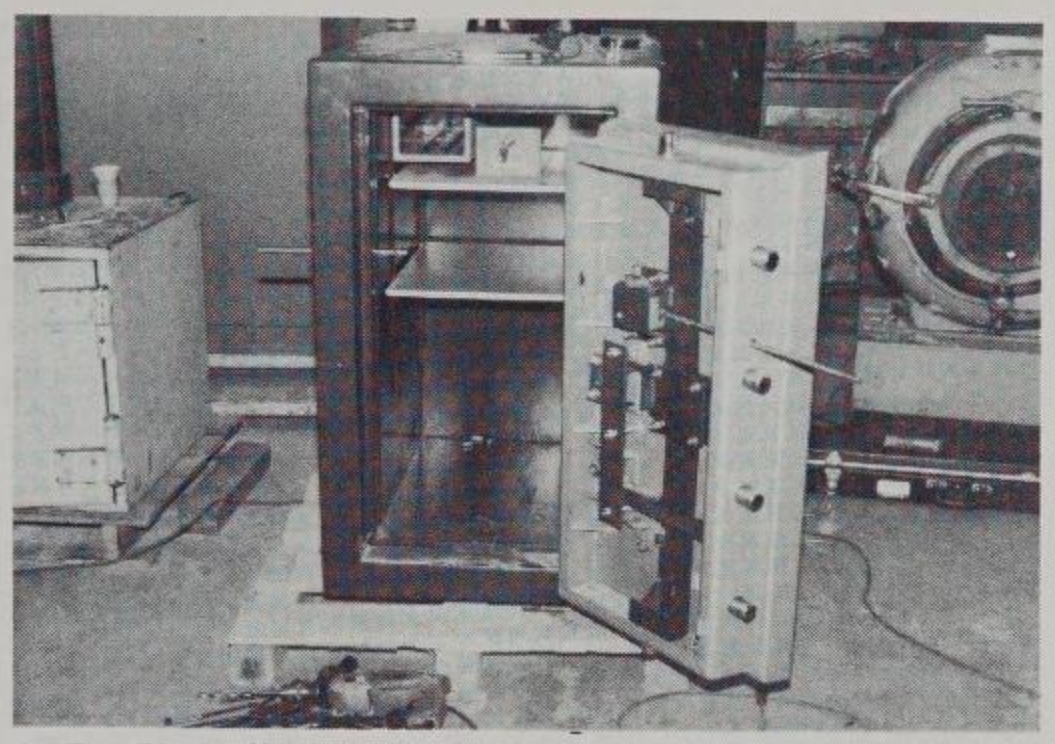
7. The six-sided Bischoff Robust TL-30.



8. Drilling through the door to remove the fence from the lock.

David Wells in photograph eight jumped into the middle of the Bischoff with both feet forward using the above procedure with Cintron magnets. After the hole was through the door, we peeked in to stare right at the stump. We drilled it off, and used a bent wire through the keyhole to retract the lockbolt to open the Bischoff.

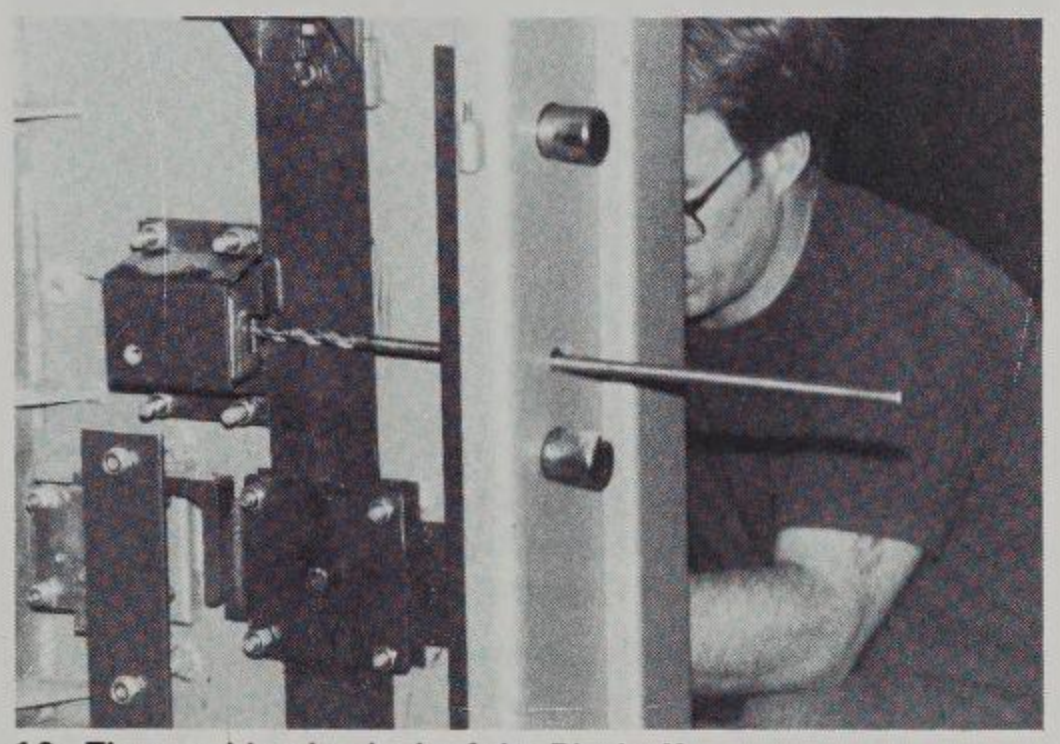
In photograph nine, we see the Bischoff with drill bits sticking out of it. These are what I call "trophy pictures," which can be considered similar to the pictures the bow and



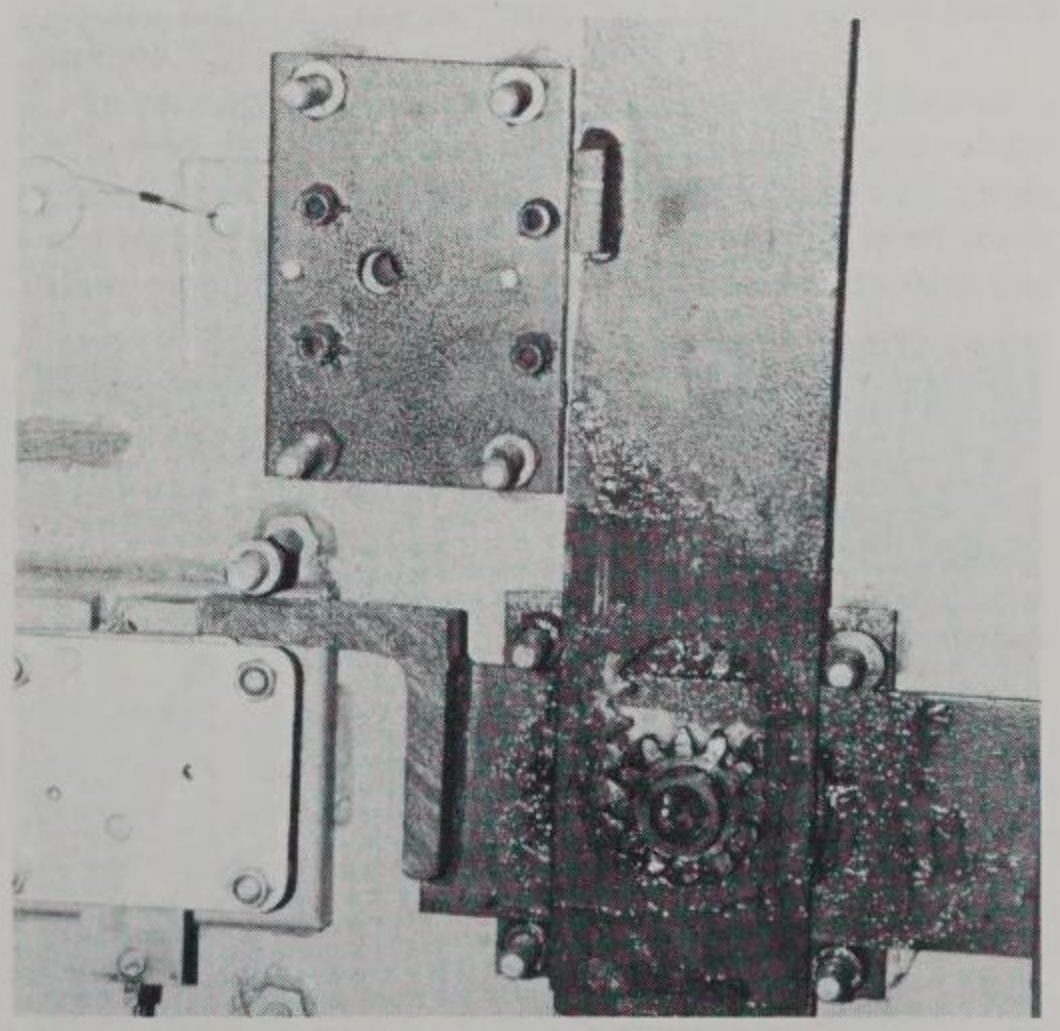
9. The Bischoff with drill bits sticking out of it.

arrow hunter takes of his kill with the arrow still in place. Some of us locksmiths get a rush out of photographs with drill bits sticking out of our defeated opponents.

Photograph 10 is a clear view of the action of the combination lock. Notice the drill bit is resting against the end of the lockbolt, and they go back easy if you set the lock in the drop-in area.



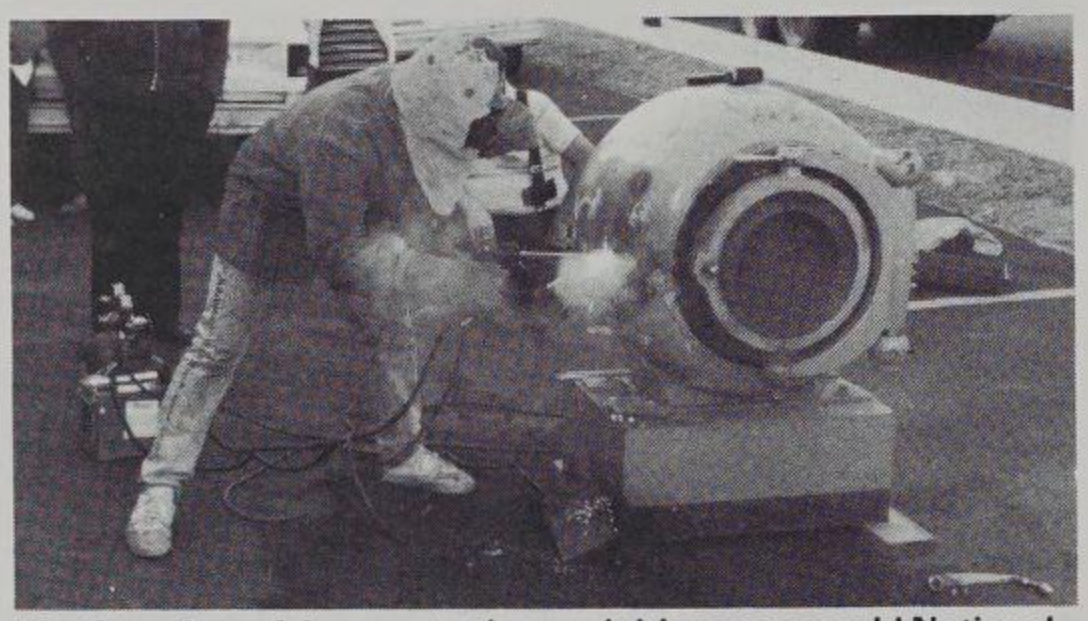
10. The combination lock of the Bischoff.



11. The keylock handle gear and the place where the combination lock used to be.

In photograph 11, we can see the keylock to the left, the handle gear to the right, and at the top of the photograph is where the combination lock used to be since the lock was removed for this photograph. This enables us to see the "bridge" that the lock mounts on, mounted onto the door. The reason for the bridge is to eliminate the possibility of drilling through a lock mounting screw and if there is no bridge, the lock is mounted with screws that go right through the glass, thus rendering it vulnerable to this kind of attack. As you work on and service European safes, keep this tip in mind as you photograph and blueprint each one.

In photograph 12 and 13, Roy suited up and gave a quick demonstration on the mini-lance. I believe this is an old National cannonball that Roy really cut loose on, burning several holes clear through the C-ball. Notice that Roy is wearing leather from the waist up.



12. One view of demonstrating a mini-lance on an old National cannonball safe.

13. Roy tackles the cannonball safe from another camera view.

Photograph 14 is the traditional classroom picture. Put two or three dozen locksmiths and safemen together and a good time is guaranteed.

14. A traditional classroom picture of the safecrackers.

In conclusion, many thanks to Sal LaValle for all the help in putting the Safecracking Seminar together. Thanks also to Dave Wells, Roy Watters, and Carlos Cintron for lending a helping hand. ■

Atlanta Safecracking

"When all was said and done, we had opened somewhere between 40 and 50 safes, and in this article, we will be looking at some of the more interesting openings."

by Dave McOmie

This month we are off to Atlanta to work in a beautiful warehouse that Fichet-Bauche graciously provided us with, on safes that came in from all over the southwest along with 40 locksmiths and safecrackers. We were ready to begin working.

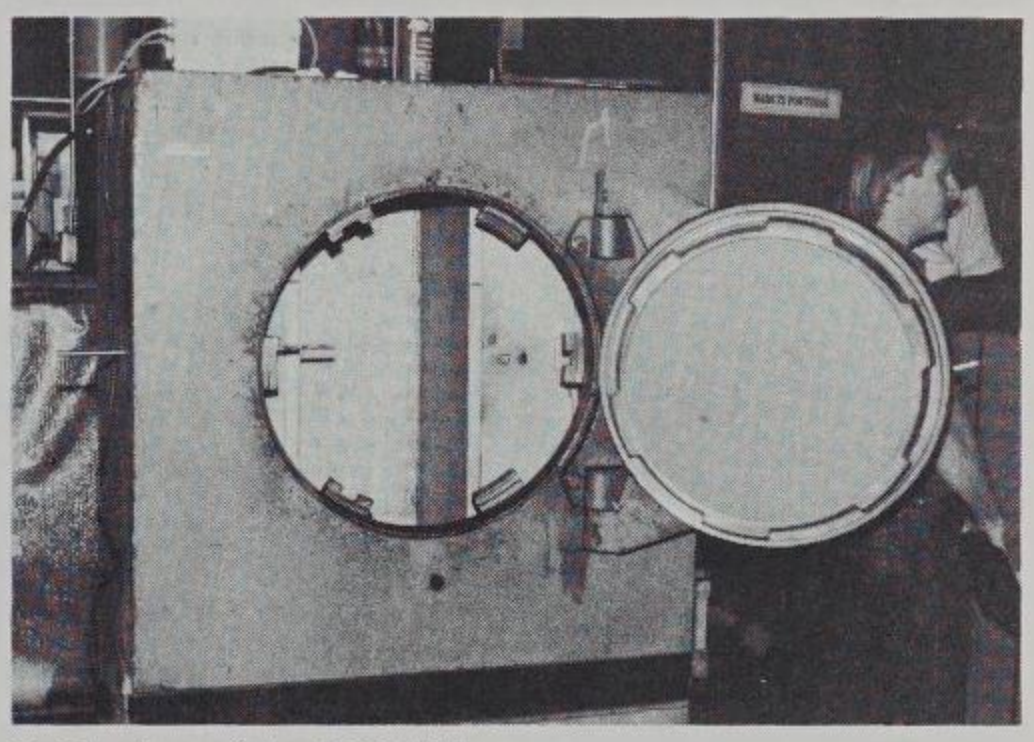
When all was said and done, we had opened somewhere between 40 and 50 safes, and in this article, we will look at a few of the more interesting openings.

In photograph one, we have a big old TRTL-30 Diebold lug door. A turn of the dial reveals a clicking sound around zero as we turn the dial, so we know it is a tri-bolt door with a 180-55 on the inside. These doors are difficult to put a hole in, (my best time on a TRTL-30 is almost two hours, which justifies a "difficult" rating), so we opted for a side attack going for the change key hole.

We drilled our hole about 4" back from the face of the door, and ¾" above the centerline of the dial. No hardplate was encountered, just mild steel and concrete, and it was actually at this point that the photograph was snapped, as a man peeked in the hole with a long borescope.

Opening a 180-55 through the change hole is easy, since the lock is a front drive, which means we can line the wheels up in order. A quick tip is that whenever you are using the change hole to line up the change hubs in the wheels, use the changing index on the dial ring to take your readings from. This eliminates any addition or subtraction of numbers, because the numbers that line up the change hubs at the changing index are the numbers that will open the lock at the opening index.

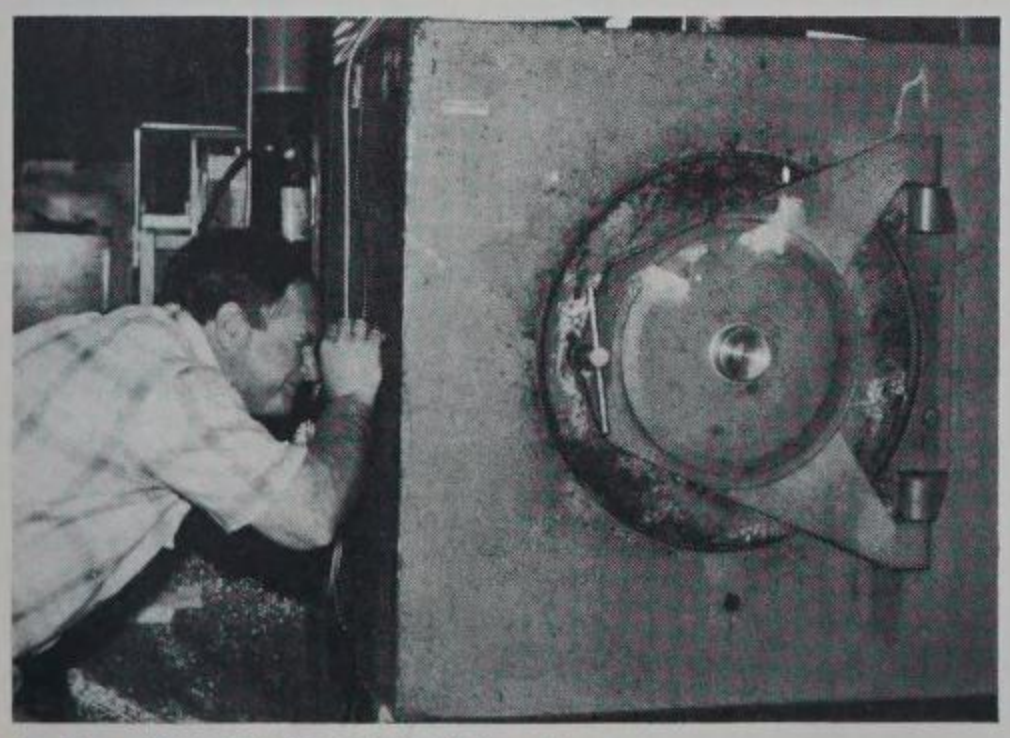
That is exactly what we did. In photograph two, you can see evidence of our success, since the door is open. You can also see a drill bit sticking through the hole we drilled.



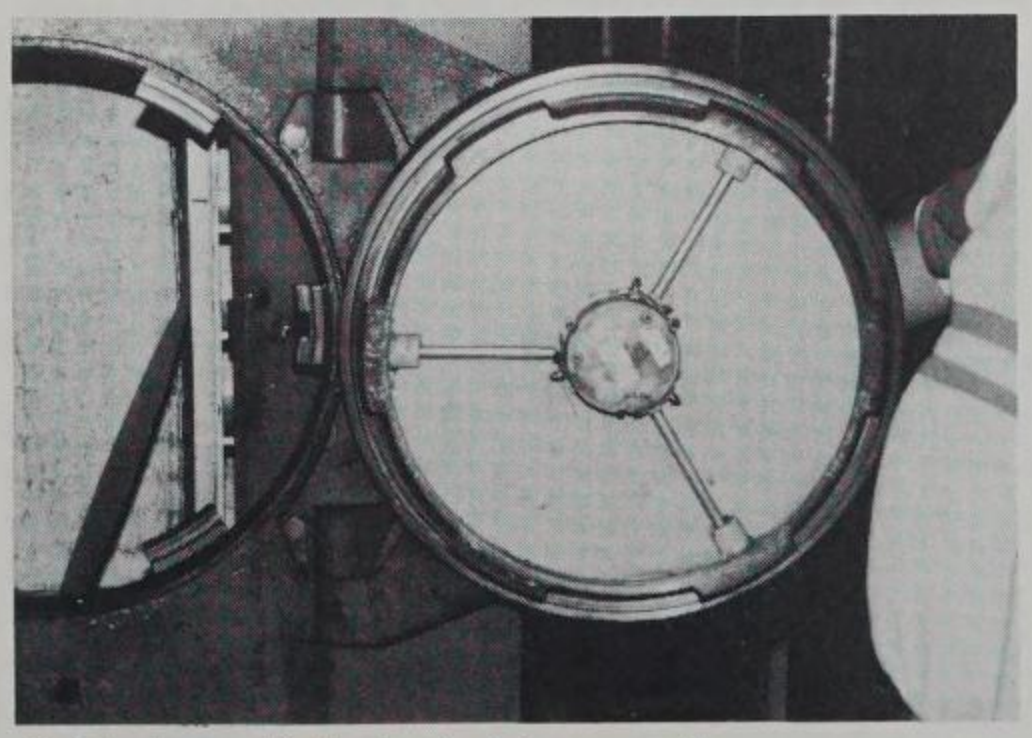
2. The door of the 180-55 is open.

Photograph three shows the door with the back plate removed, and as you can see, there are three locking bolts at the 3, 7, and 11 o'clock positions. Each bolt has its own slotted lug to engage in, rendering a side-punching attack useless.

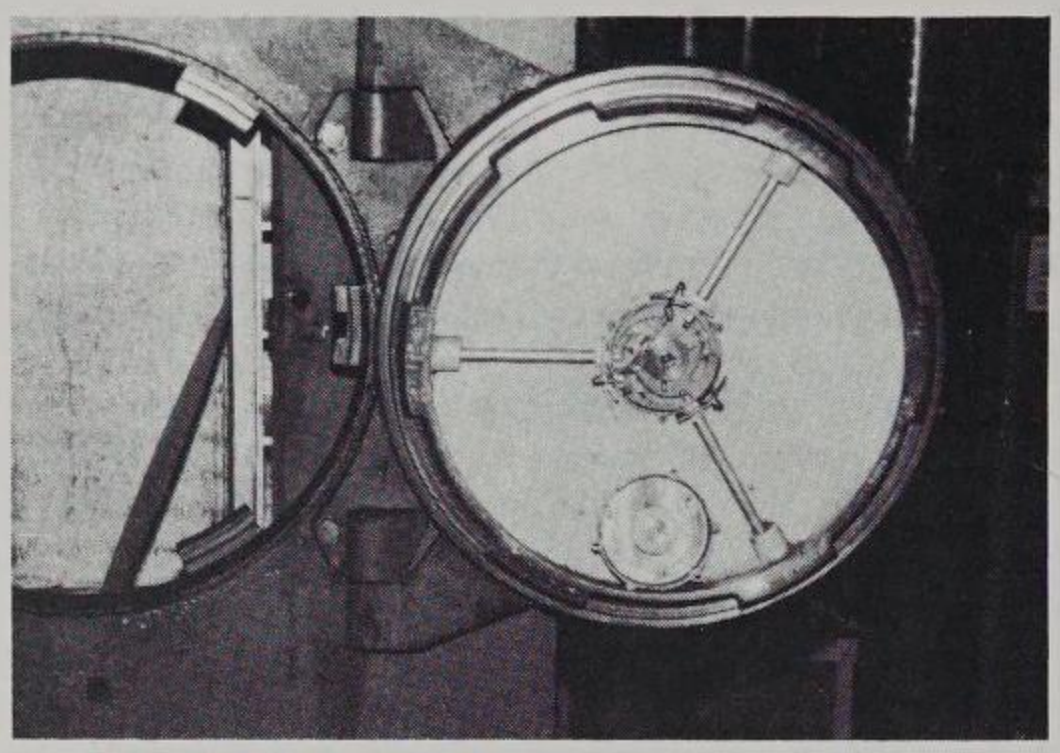
In photograph four, the back cover of the lock has been removed, giving us a view of the lock. At the bottom of the door, notice the back cover with the wheel attached. These are regular size 1¾" wheels, which you will find most of the time, though there were a few of these made with the



1. An old TRTL-30 Diebold lug door.



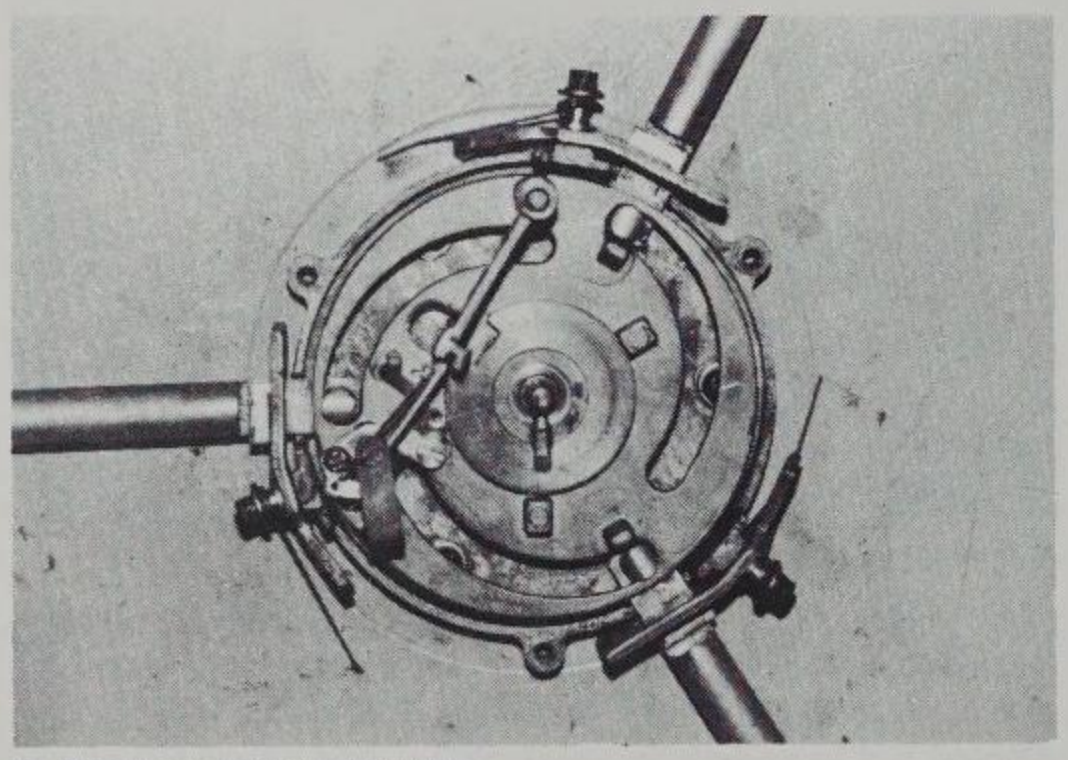
3. The door with the back plate removed.



4. The back cover of the lock has been removed.

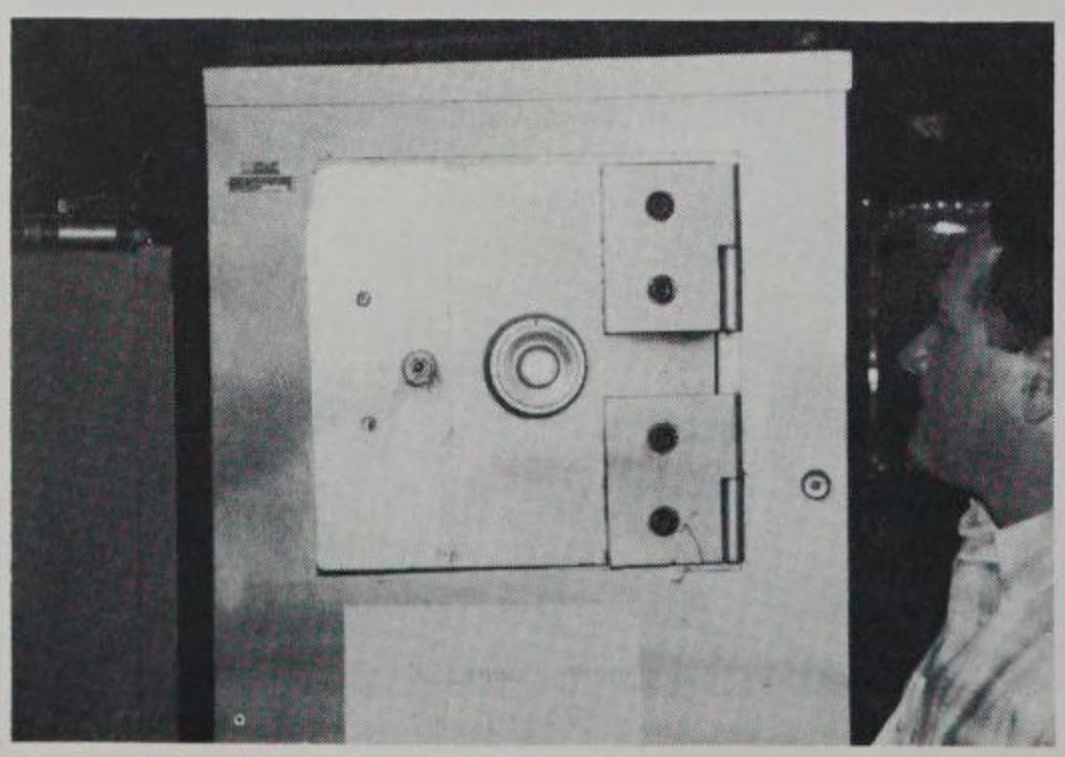
peanut wheels.

In photograph five, we have the heart of the famous 180-55. The cam plate is in the locked position, extending all three bolts outward. The lever is in the cocked position, ready to jump into the wheel gates when they are properly lined up, and with the back cover removed, the relockers are all set off, effectively blocking all three bolts from retracting.



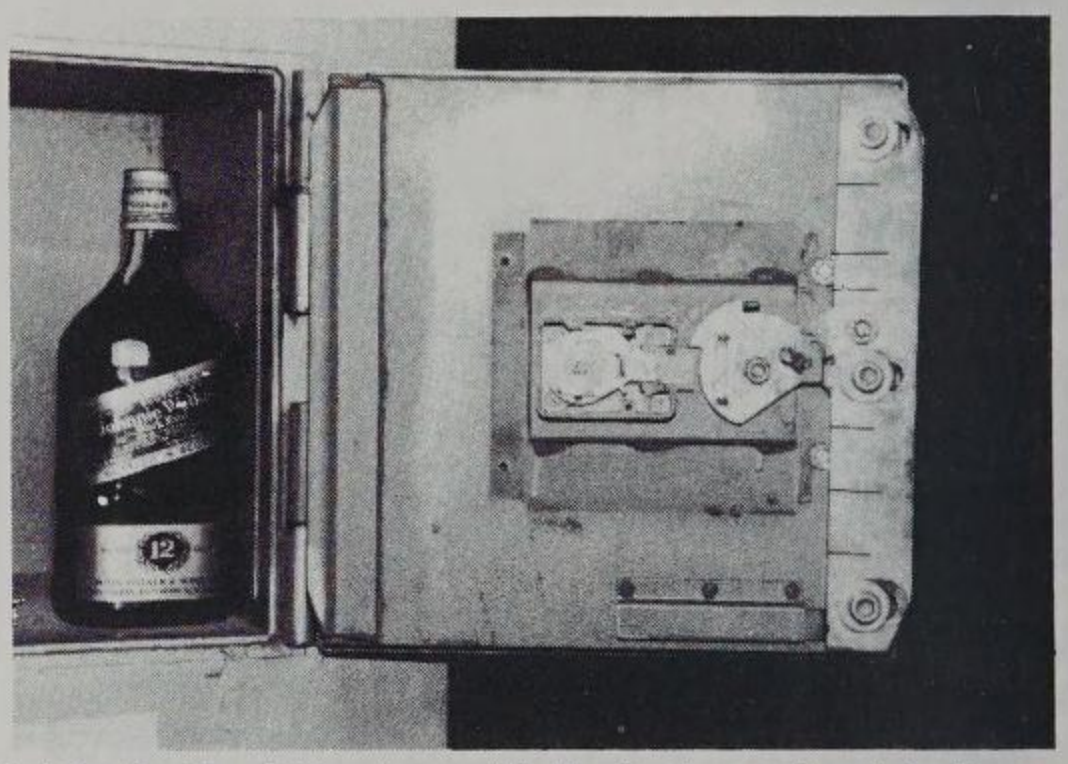
5. The heart of the 180-55.

In photograph six, we move to another Diebold, an old style square door that was burglarized, which set the relockers off. On these doors, the relockers are somewhat random, since they are not in the exact same place from door to door. We took our measurements from *The National Locksmith's Guide to Safe Opening I* and got lucky by hitting both of them almost perfectly. If you look carefully at this photograph, you can see the two holes that were drilled. The springs were removed, and the relockers were pulled back, so we were able to rotate the sheared off handle, and the safe was open.



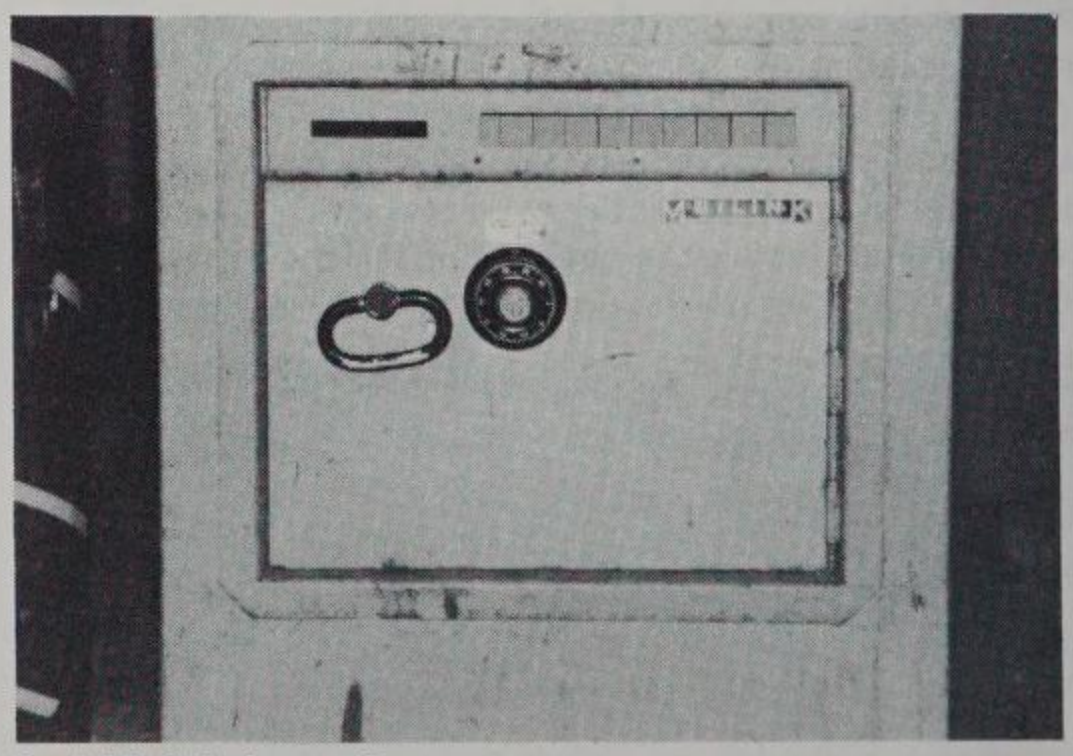
6. An old style square door Diebold.

Photograph seven shows the inside of the door with the back panel and back cover removed, and this door uses a long flat bar instead of round locking bolts. You can see the relockers at the left edge of the bar, one is above door center, one is below. The lock in this door is a Sargent and Greenleaf 6770, which is a zero change lock. When you think about it, a zero change lock makes sense, at least from the customer's point of view. With no changing index to confuse him, the layman has a much better change of changing his own combination without making a mistake.



7. The inside of the door with the back panel and back cover removed.

In photograph eight, we have a Melink drop safe. Since this safe is built just like a Melink fire safe, we decided to treat it just like a Melink fire safe. We measured 2½" over and ¾" down, drilling and punching the handle cam back far enough to bypass the lockbolt. If you look closely at this photograph, you can see the hole just inside the handle ring.

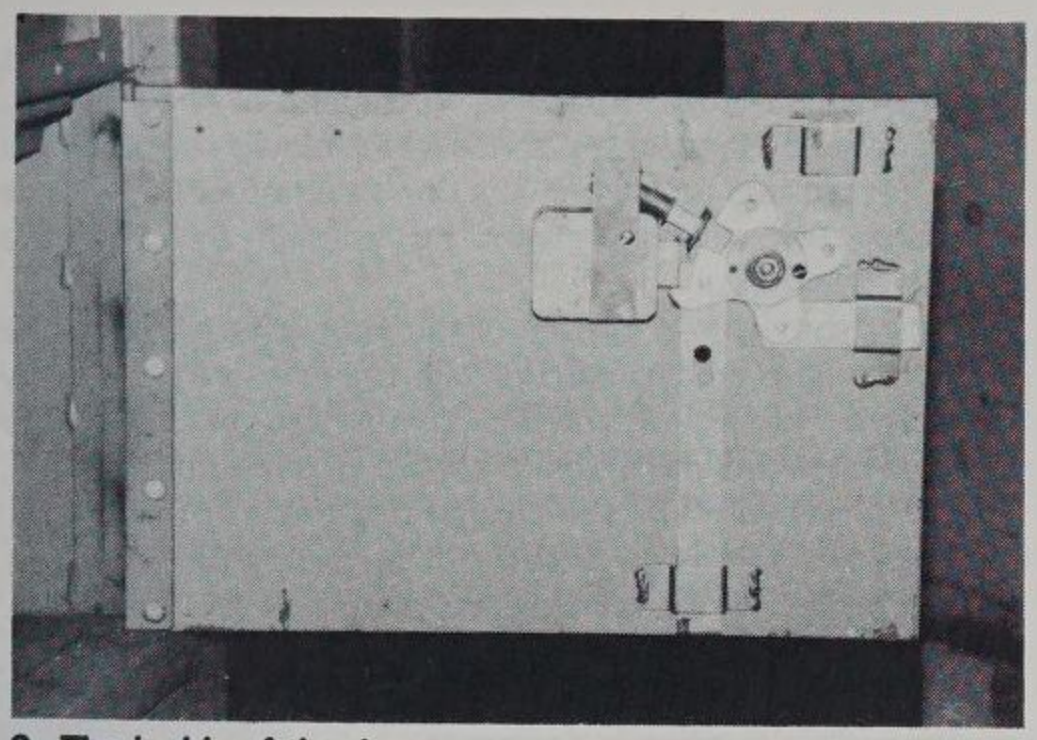


8. A Melink drop safe.

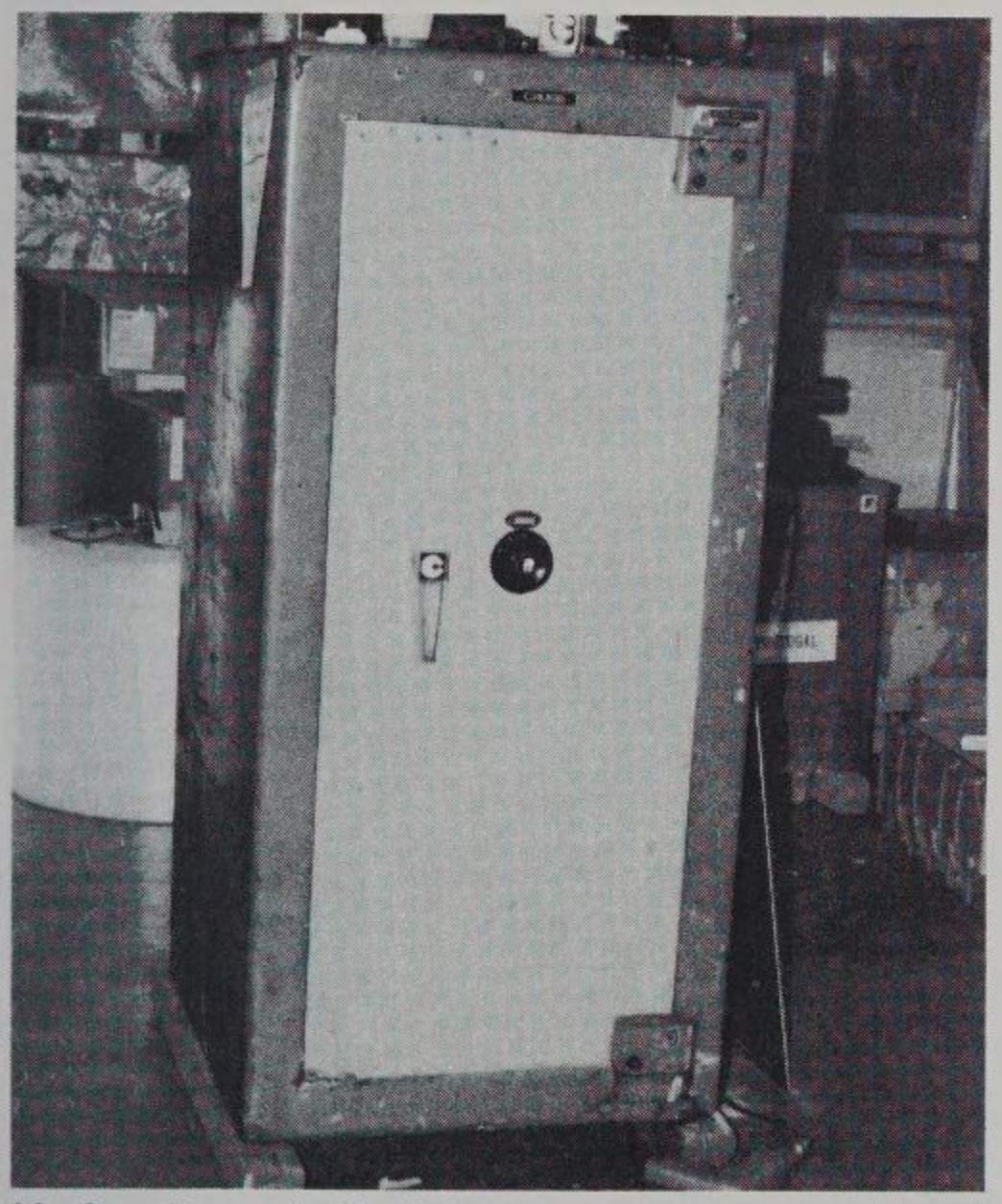
Photograph nine shows us the inside of the door, and as you can see, it is set up similar to a fire safe. The relocker is perched up above the combination lock, ready to fire off if anyone get rough, but it has no effect on us.

In photograph 10, we have a Canadian made Chubb six-sided safe. Since we knew there was glass under the combination lock, we decided on a side attack.

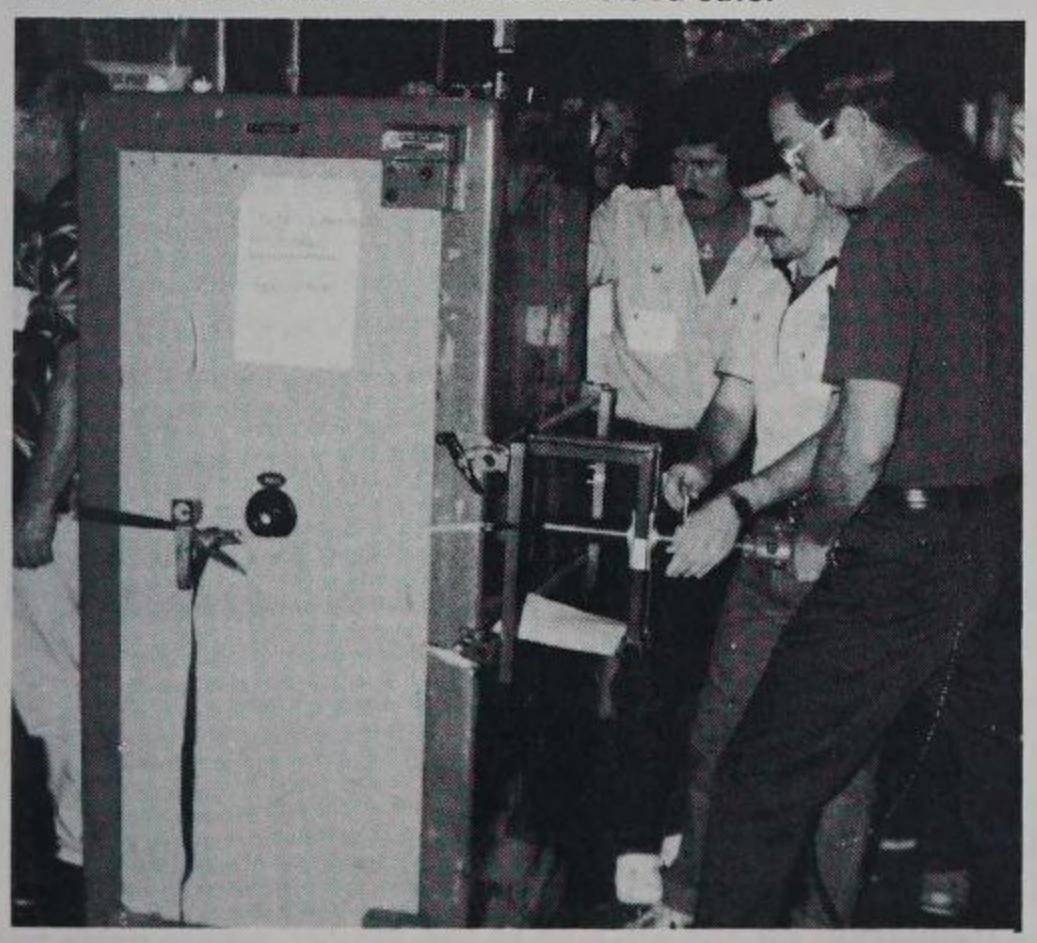
In photograph 11, a side attack is being made by an



9. The inside of the door.



10. Canadian made Chubb is a six-sided safe.

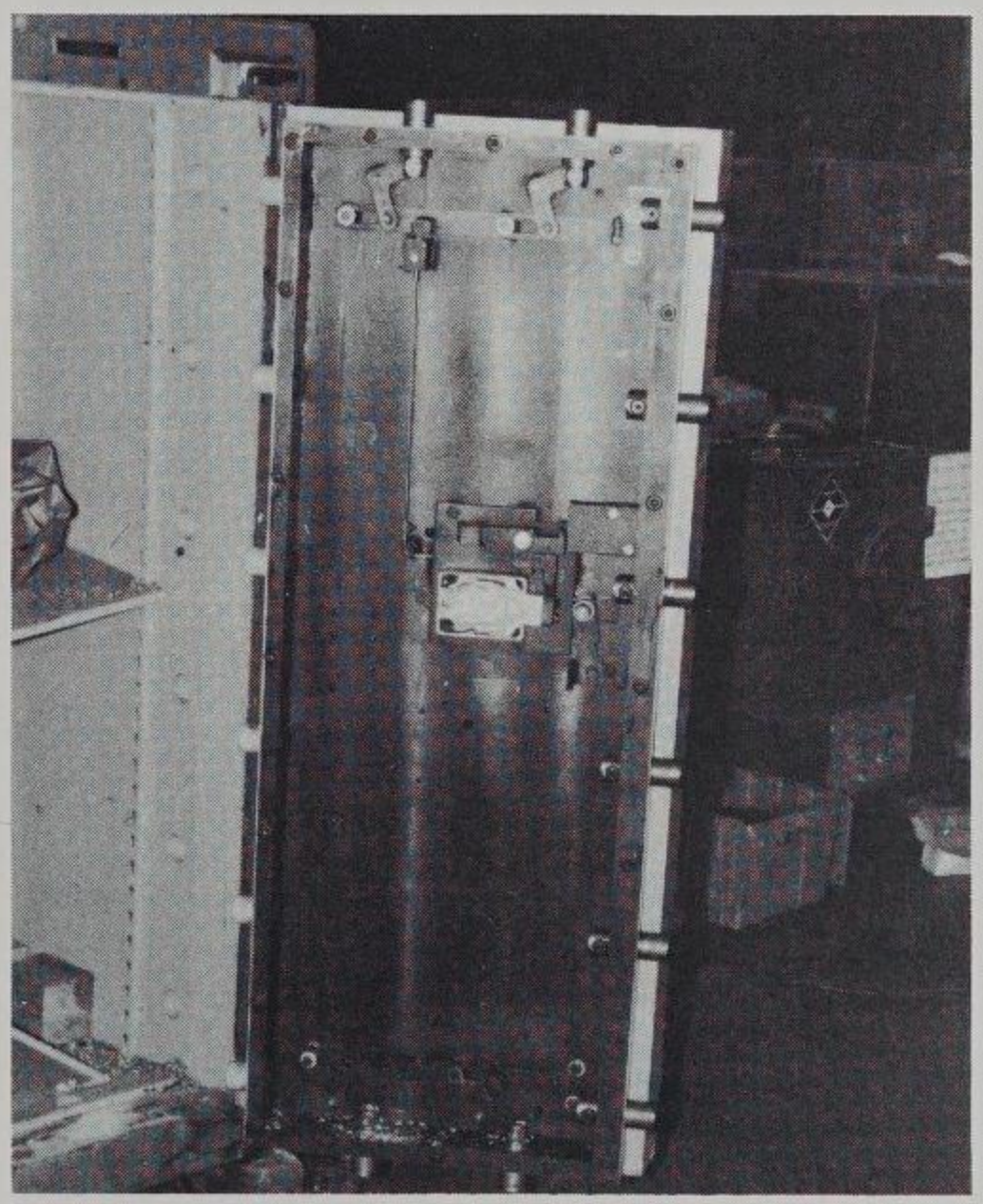


11. A side attack in progress.

enthusiastic group of guys holding a Magnum 357. Notice the piece of paper sitting on the bottom of the drill rig, this was so we could observe the chips as they spewed out the drill hole. Very interesting.

We drilled a perfect hole into the side of the lockcase, read the wheels, and transferred the numbers up to the drop-in point, which was the hard part. Sometimes transferring numbers can be the most frustrating part of safecracking. You line the wheel gates up, take your readings, transfer and transfer, but can't get the fence to drop in. Finally you start going around the dial, and sooner or later she opens, but with a lot of frustration.

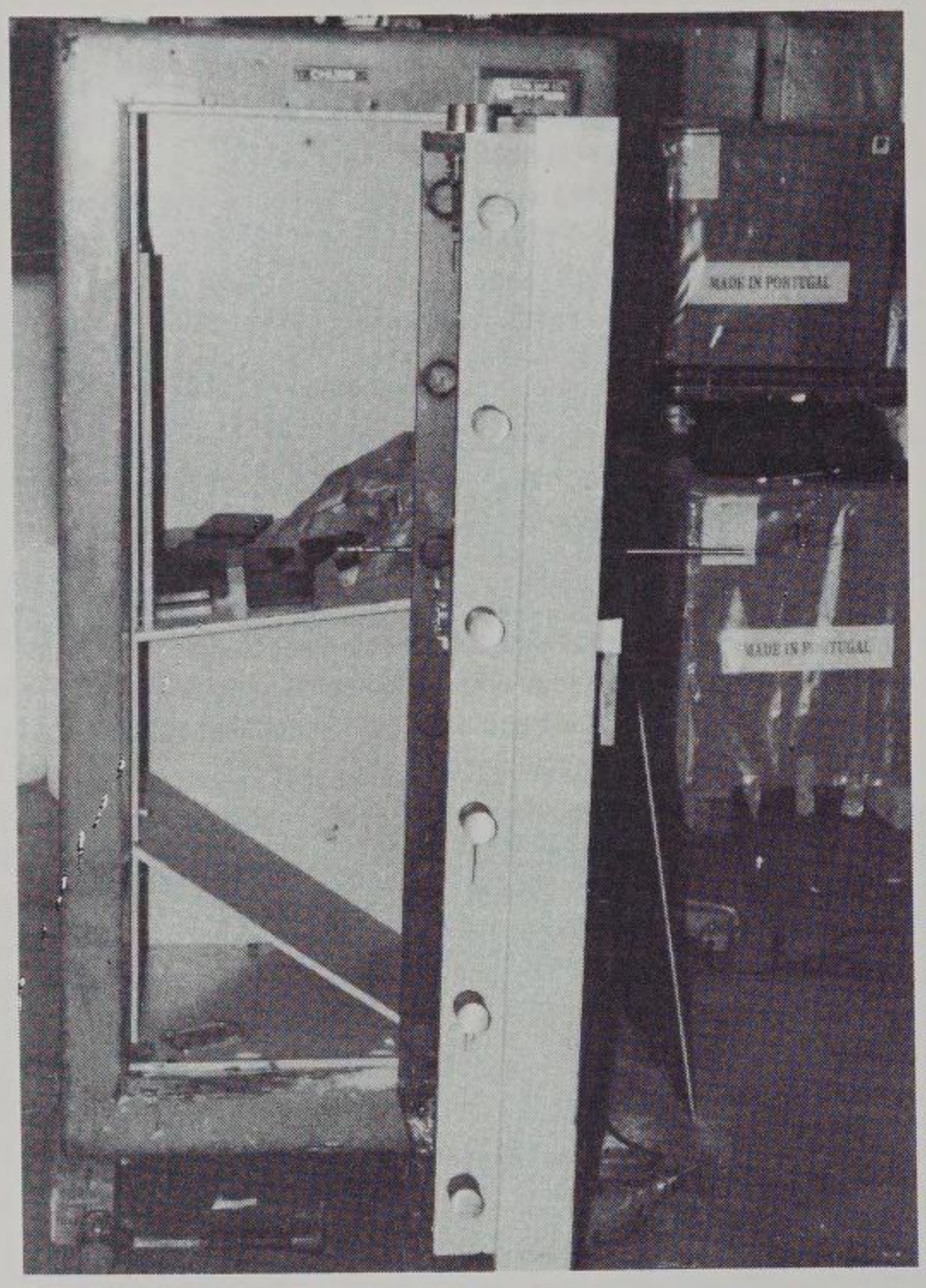
This opening was similar to that process, but we got it, as you can see in photograph 12. There are 10 locking bolts, utilized in a three-way boltwork system, with a Sargent & Greenleaf 6500 series vault lock at the helm. Notice the relocker in the upper left hand area of the door. This is controlled by a seven strand wire cable that is connected to the glass plate under the lock.



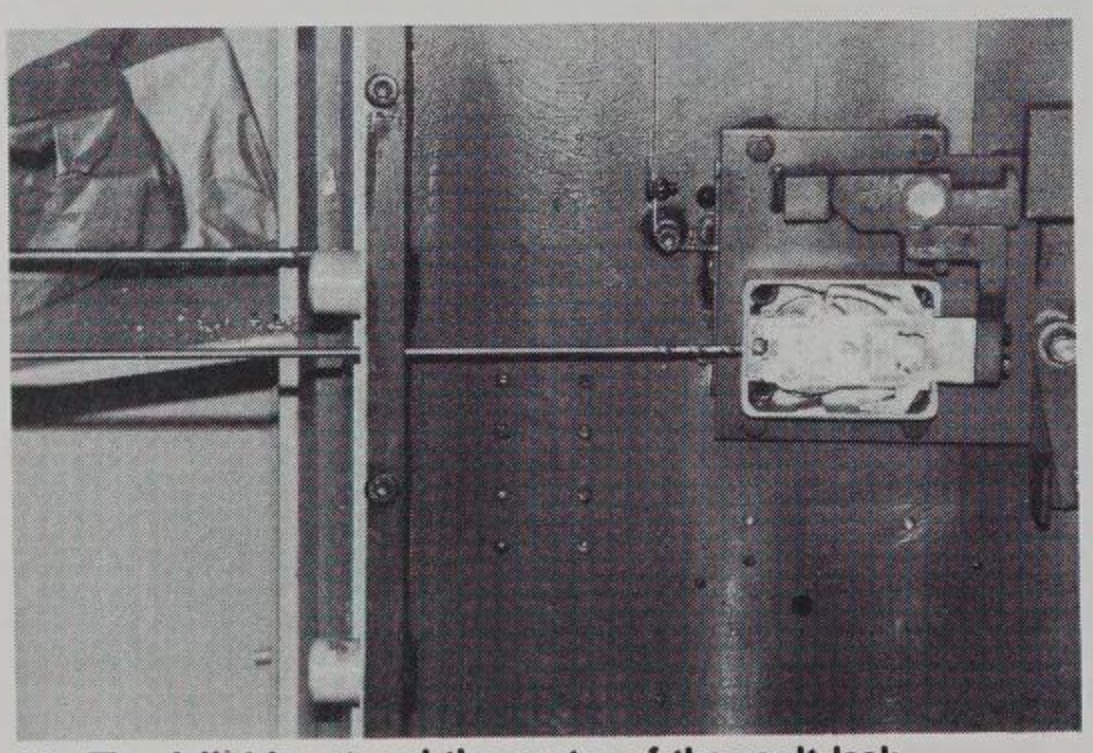
12. A successful opening.

In photograph 13, we have a profile shot of the door. As you can see, the bolts are good size, and the door is fairly thick, but we didn't know how far back to drill on this one. I did not have my Chubb book with me, and there was no key hole through which to measure the thickness of the door. We shimmed the outer lip and added 2" to our measurement, and as you will see in a moment, it was a good guess.

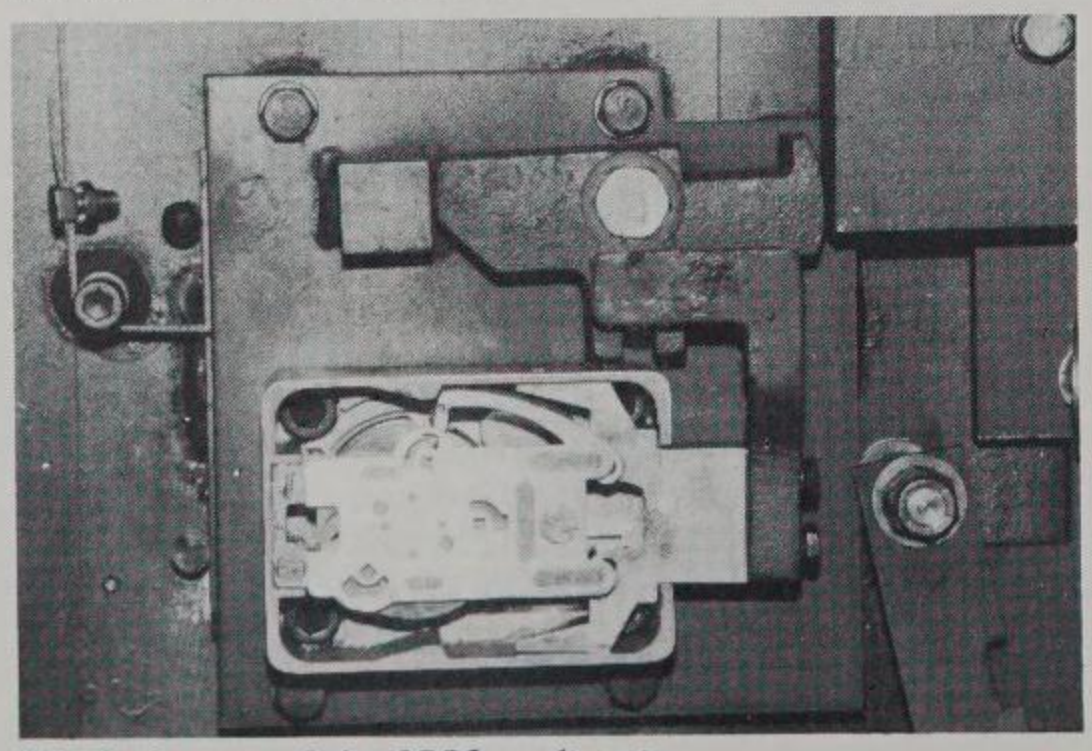
In photograph 14, you can clearly see the results of an educated guess, since the drill bit has entered the center of the vault lock, perfectly placed to read the wheels. Normally we would not want to drill into the center of a combination lock, because the risk is too high of hitting the wheels, and it also makes it difficult to see all the wheels; but in the case of a vault lock, the center is the best place to drill. The wheels are not close to the edge of the case, and there is a nice pocket there to penetrate.



13. A profile shot of the door.



14. The drill bit entered the center of the vault lock.



15. A close-up of the 6500 vault lock.

Photograph 15 gives us a close-up of the 6500 vault lock, and notice the piece attached to the end of the lockbolt. This controls the blocking device which blocks the boltwork from retracting, and when the combination is dialed, the blocking device pivots down far enough to allow the boltwork to pass.

Notice the cable at the left of the photograph. This is the relocker cable which controls the relocker we previously discussed. Notice that the lock is mounted on a bridge, so there is no possibility of drilling through a mounting screw. A side attack is really the only professional option.

In photograph 16, we have the little rascal that would not open. This is a very small Mosler cannonball. It is actually a round door Banker;s safe, but we call it a cannonball. We drilled a hole through the top at 4½" back at the 12 o'clock position. This is what is happening in photograph 16.

16. A small Mosler cannonball.

It is at this position, where I have previously found the locking bolt on three identical Moslers that I measured. But on this one, we did not. Time ran out. If anyone has an explanation for the air-hole in the Mosler, please write to me in care of *The National Locksmith*. ■

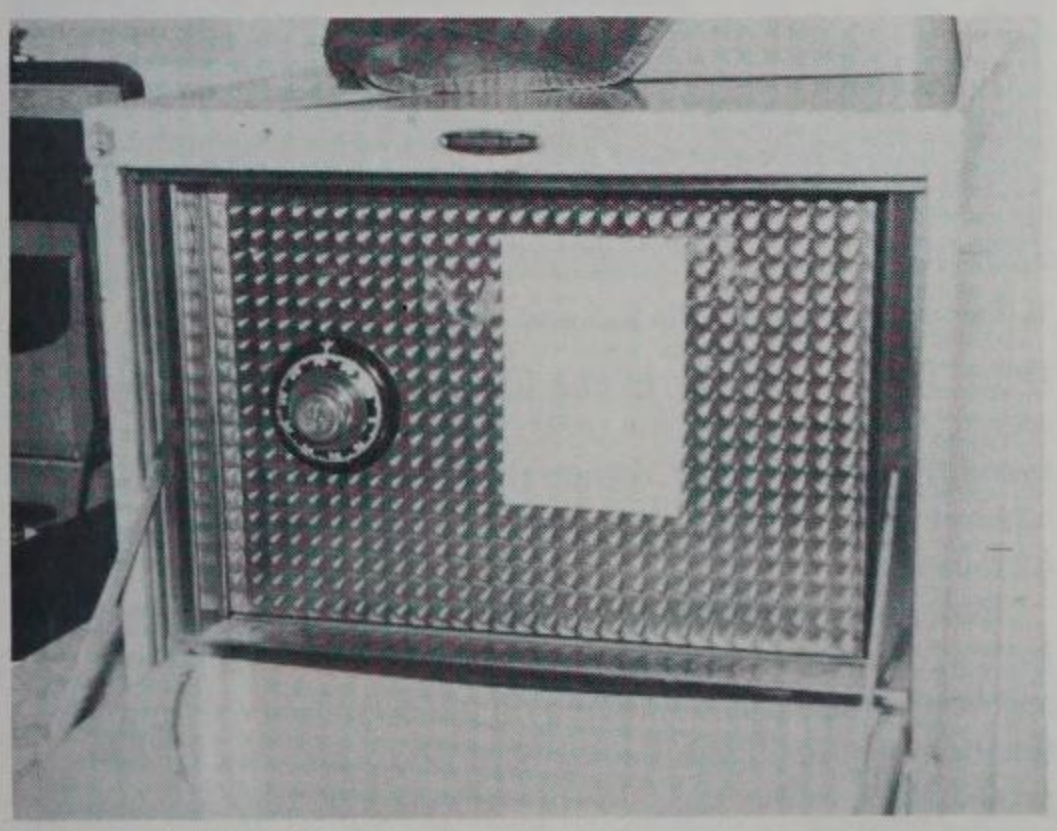
Cracking An Invincible

"It was picture perfect. Through my scope I could see all three wheels, the lever and the driver. The wheel gates were lined up under the lever."

by Dave McOmie

The call came from Dan Frazier of Associated Safe & Lock in Vancouver, Washington. He had a customer who had an "Invincible" file that would not open. I jumped into my van and traveled up to Washington, snapping photograph one.

1. The "invincible" safe.



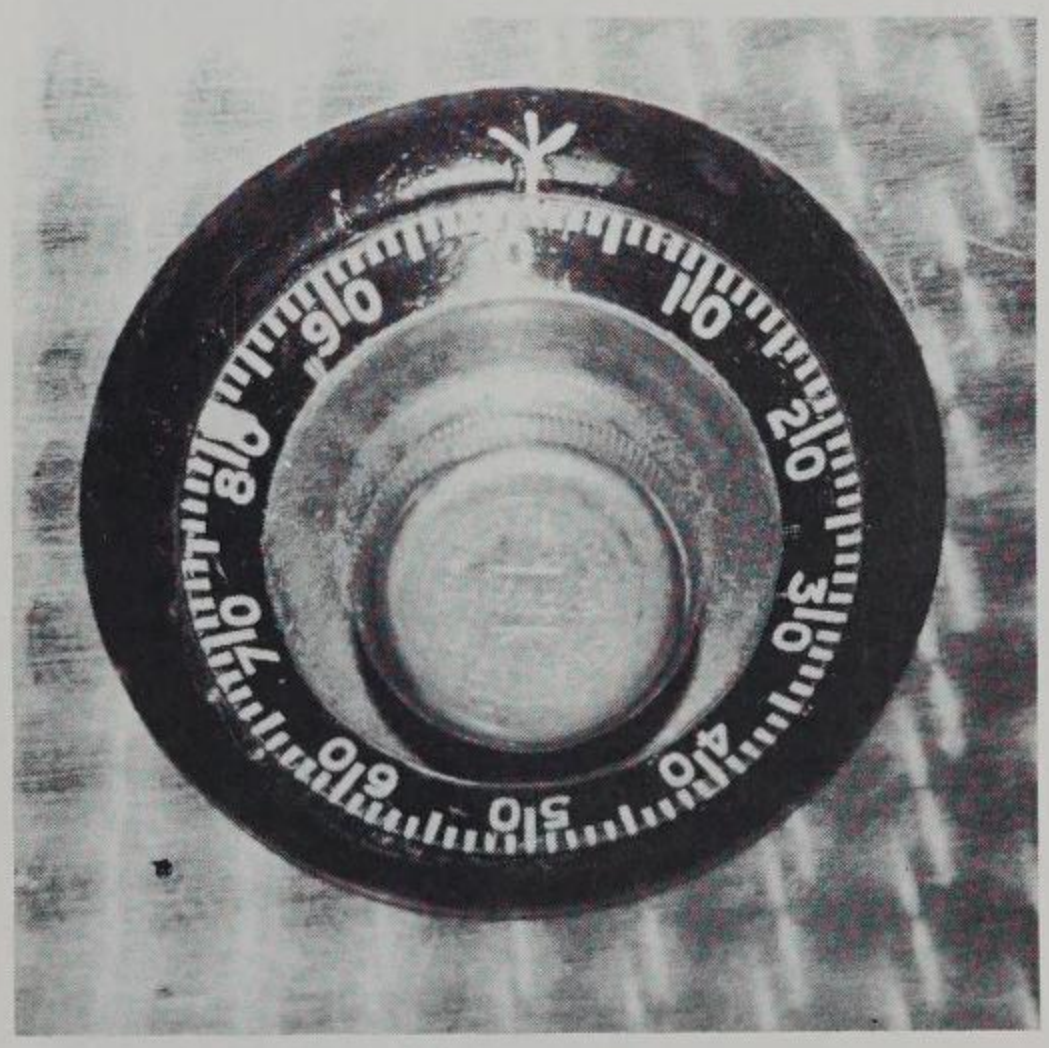
2. The safe door is exposed.

What do you see in photograph one? A simple file cabinet drawer head? Wrong, it is a safe. This is an "Invincible" manufactured in metropolitan Manitowac, Wisconsin 30 years ago. This was only the second one I had ever seen and the first one I had to open.

One more thing about photograph one before we travel on. Notice the thumb button to the left of the handle; when you slide it to the right, the face of the drawer swings down like a trap door on a hinge, exposing the safe door.

We are looking at it in photograph two. As you can see, the door is very nicely jiggered and has a Yale locking dial on its left side. The piece of white paper in the middle of the door is a note to any prospective burglar stating the safe is unlocked and contains no drugs, jewels or money.

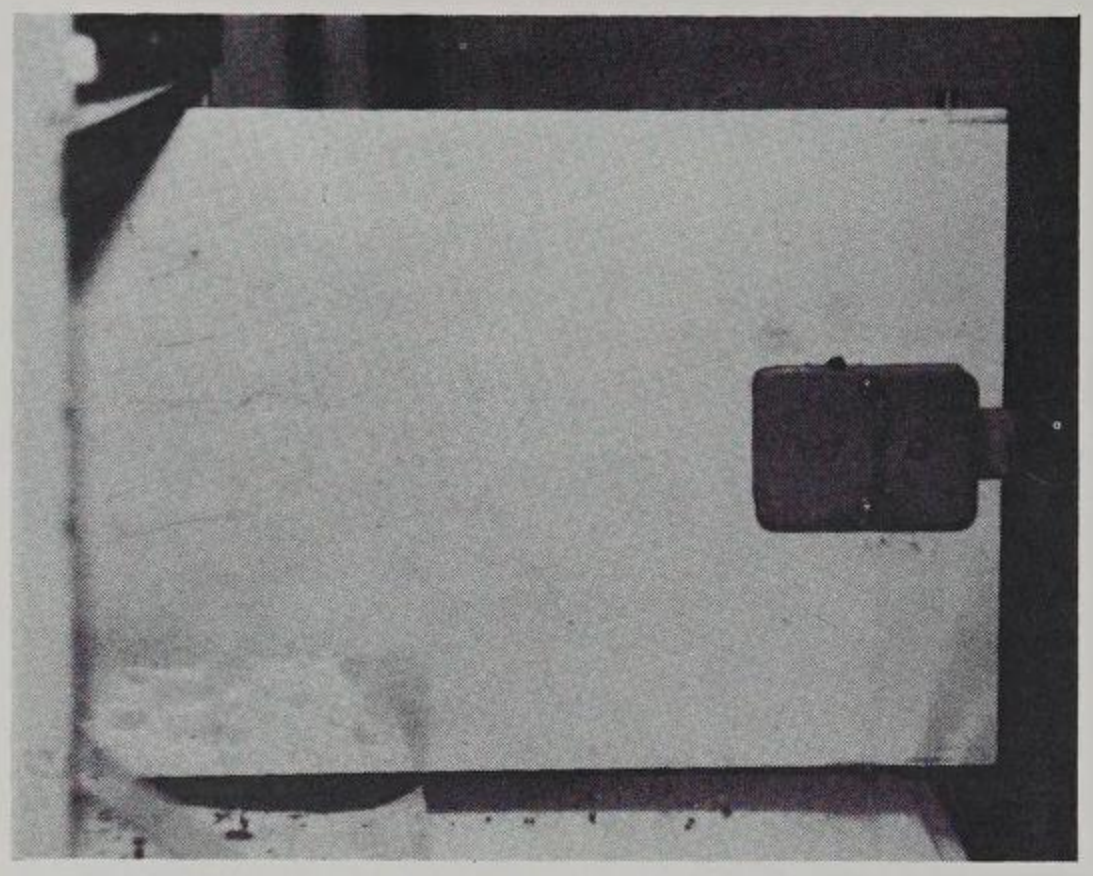
In photograph three, we have a close-up of the dial. This is a Yale dial that has "Invincible" engraved on the dial hub. (Oddly, the dial ring is an S&G, and there is no evidence of a prior drill job. Figure that out.)



3/ Close-up view of the dial.

The Yale dial has a strong indication there was a Yale lock on the inside, so the drill point was measured, marked and double-checked at 86.

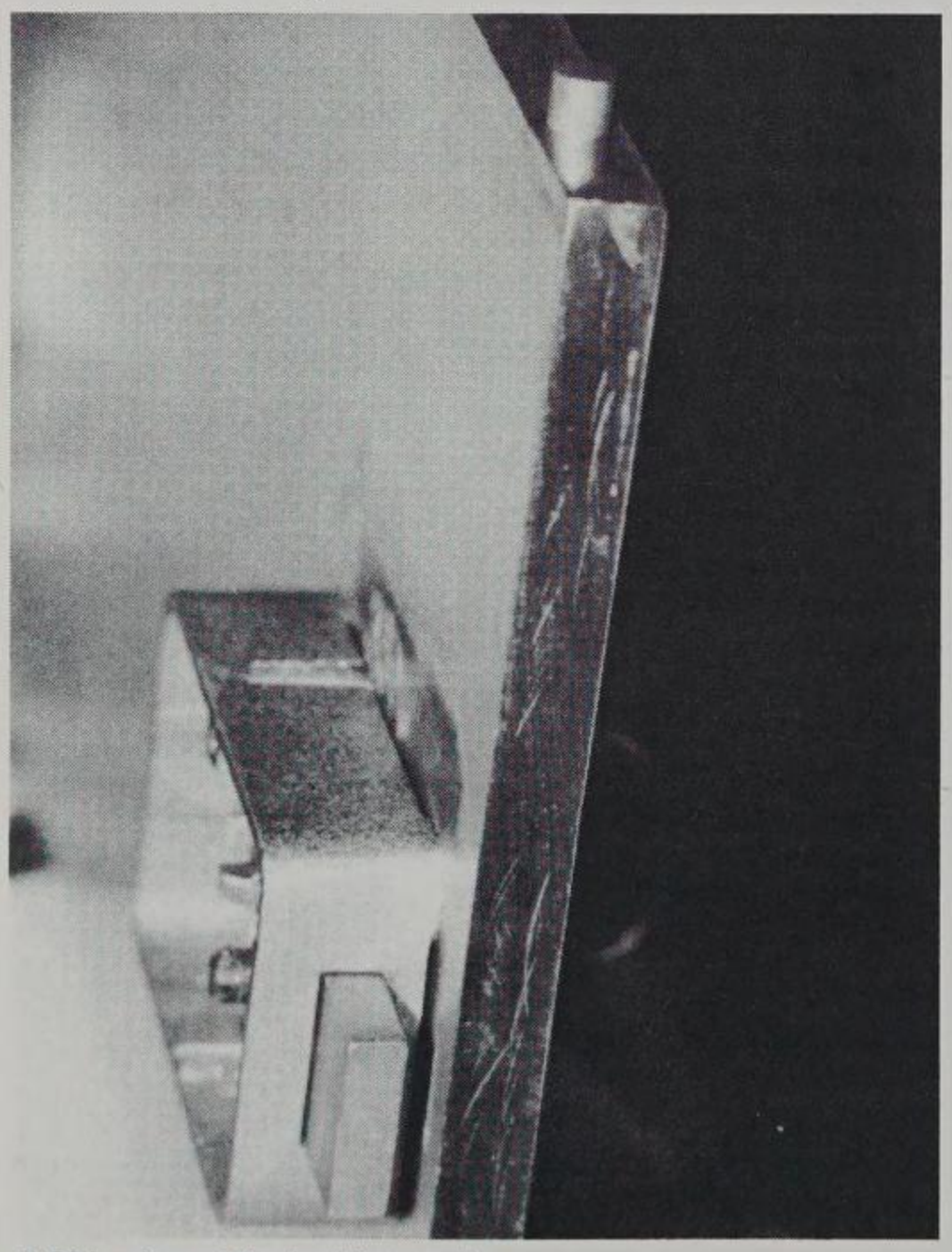
It was picture perfect. Through my Olympus scope, I could see all three wheels, the lever and the driver. The wheel gates were lined up under the lever and the Invincible did not prove to be quite so invincible after all, as is evident from photograph four. This is a simple boltwork arrangement, with



4. The wheel gates are lined up under the lever.

one top and one bottom bolt, both controlled by a cam arrangement with the combination lock.

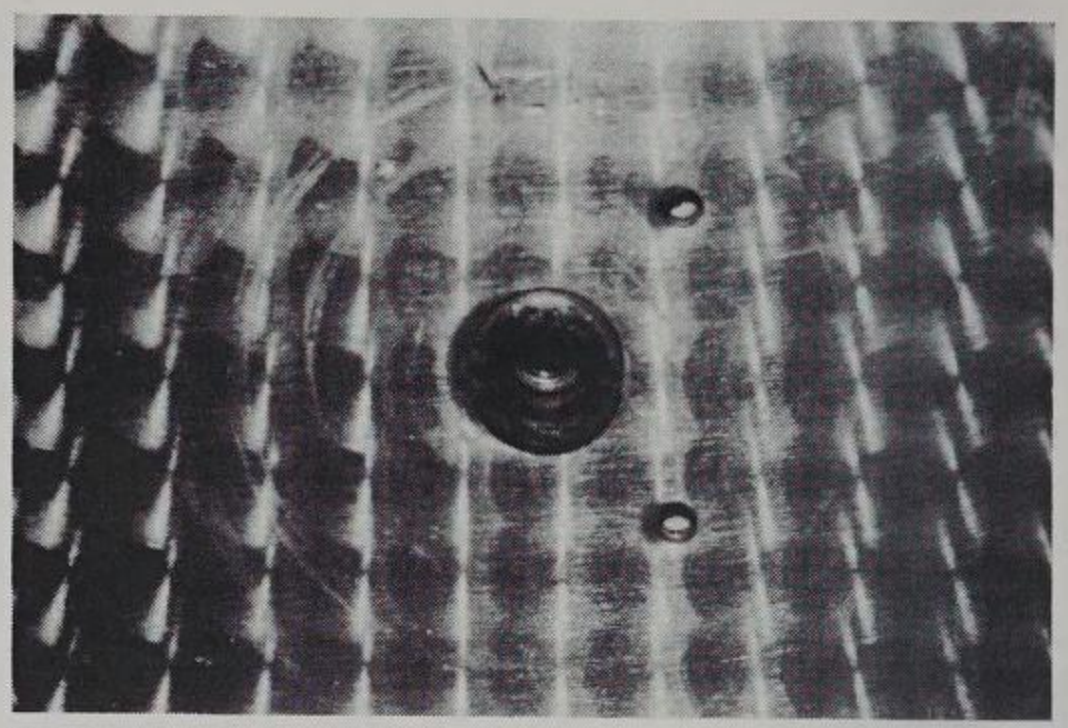
Photograph five is an almost side-view, showing how the locking bolts actually travel inside the door itself. At the top of the photograph, you can see the top bolt. In case I forgot to mention it, this is a 1/2" thick door, but it is only 1/4" to the center of the locking bolts.



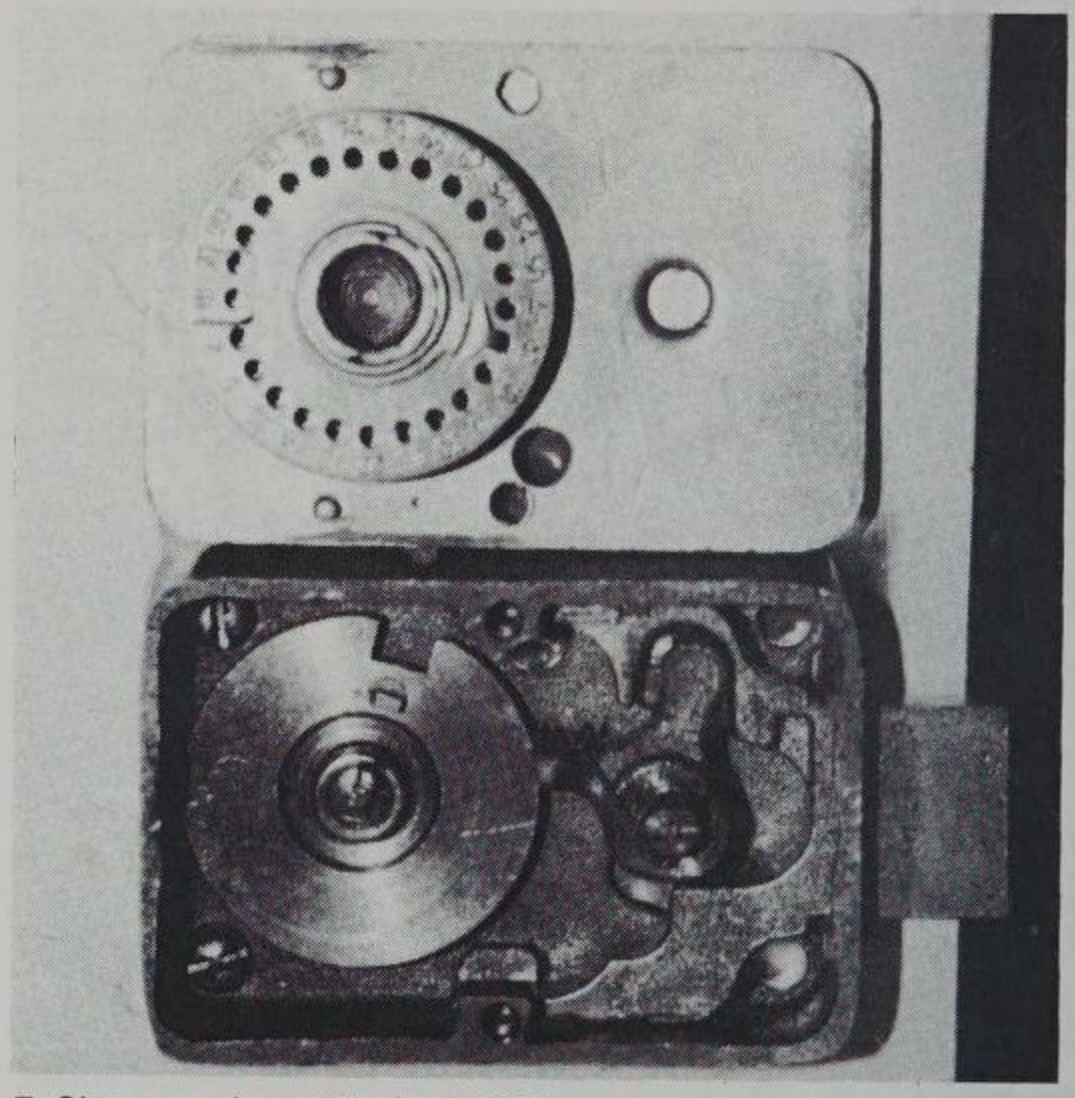
5. Side view of the locking posts.

With the dial and ring removed, photograph six shows us the area underneath the ring. Notice that the two mounting screw holes go clear through the door. (Although there are four mounting screw holes in the lock, Invincible chose to attach the lock to the door using only two.) Also notice the tube. Yes, the dial ring is held on with a tube nut.

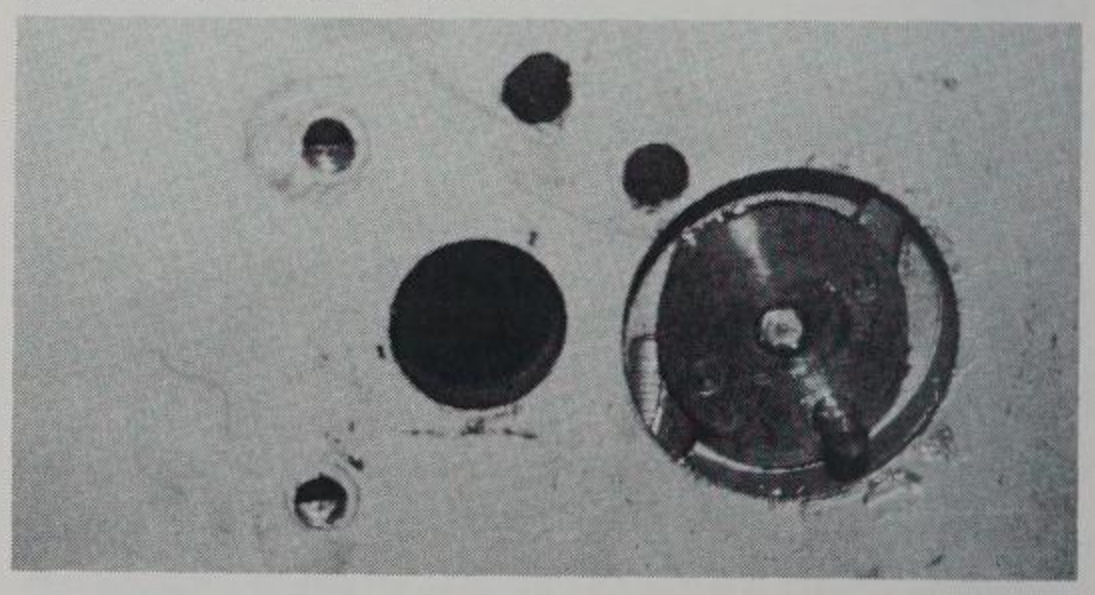
Photograph seven gives us a close-up view of the Yale



6. The area underneath the ring.



7. Close-up view of the Yale OC6.



8. The cam operating the top and bottom bolts.

OC6. The back cover of the lock, with three hole-change wheels, sits on top of the lock. It is the hole change wheels that differentiate the OC6 from the more common OC5 which has three mesh-change wheels. Remember that piece of safe lock trivia.

Photograph eight gives us the heart of the matter. With the lock removed, we can now see the cam that operates the top and bottom bolts. The little pin on the bottom of the cam goes through a hole in the back of the lockcase and rides in a groove cut into the back side of the lockbolt. Very interesting, but not quite "Invincible." See you next month.

If the dial is removable (or removed), another good option is to drill out one of the lock mounting screws. Examine photograph six and you will see that the threaded holes for the two mounting screws go clear through the door.

Chubb Safe Opening

"This month we are going to talk about Chubb safes. We will look at a couple of safes I drilled open and examine some of the differences between them."

by Dave McOmie

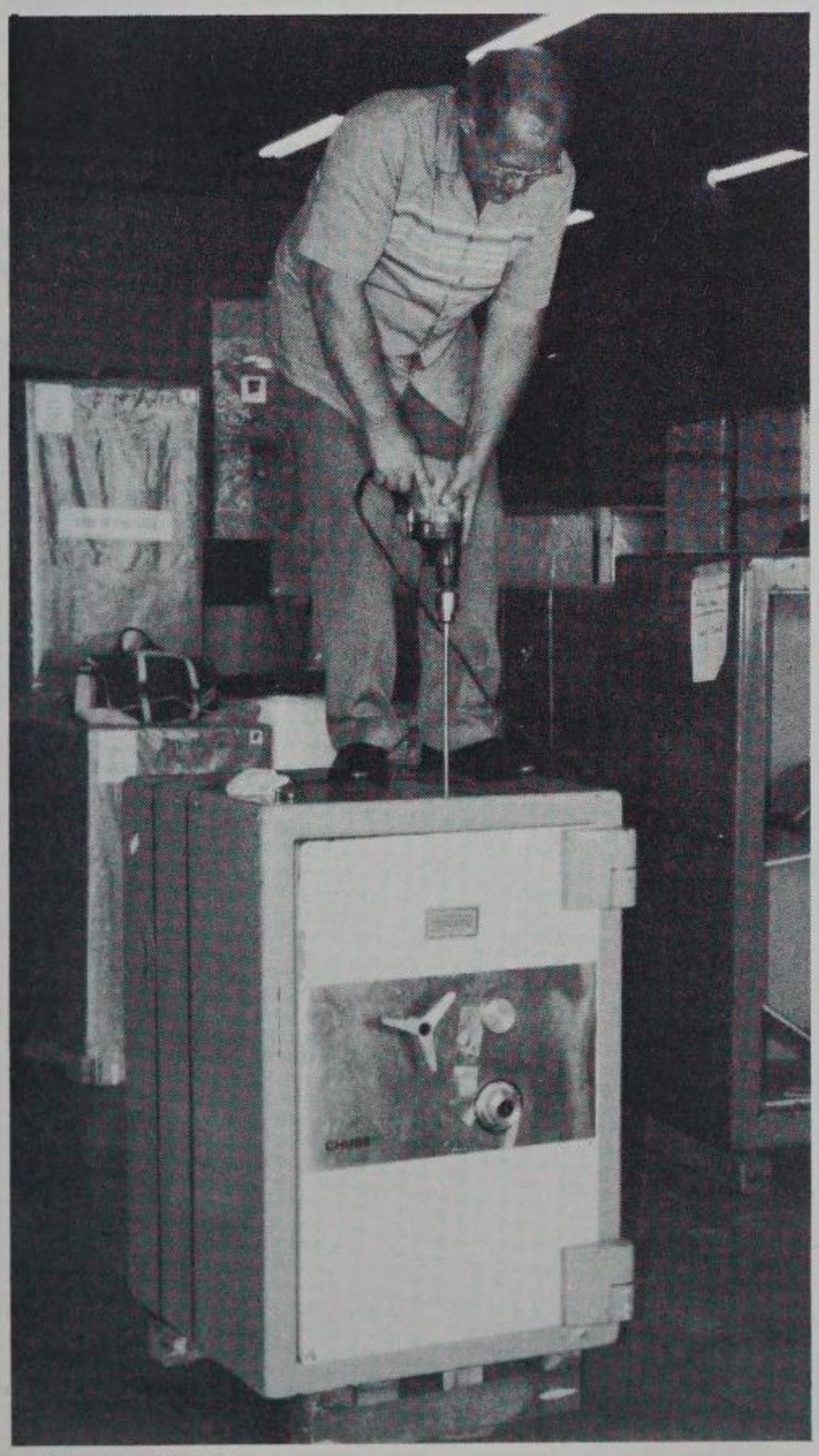
What is the best safe in the world? A Chubb with an Isolator mechanism? A Mosler-Corliss cannonball with rotating ball? A Tann Diamond? An Ely-Norris cannonball with the double compound door? An ISM Super Diamond with almost as many relockers as I have fingers? A Diebold Banker's Safe with the triple geared Peerless lock and two-movement timelock? That is the question of the century, but one to which I don't think there exists a definitive answer. These are all world class safes, and all deserve our collective respect.

If you think I am ducking the question, you're right, I am. It is difficult for me to declare with conviction and certitude which safe is "the best." But it is not difficult for me to declare with conviction and certitude which one I would have if I had enough money and valuables to warrant having a world-class container. Without a doubt, I would convert dollars to pounds and buy the Rolls-Royce of safes: An English Chubb with an Isolator; either a Sovereign or a Bankers Treasury.

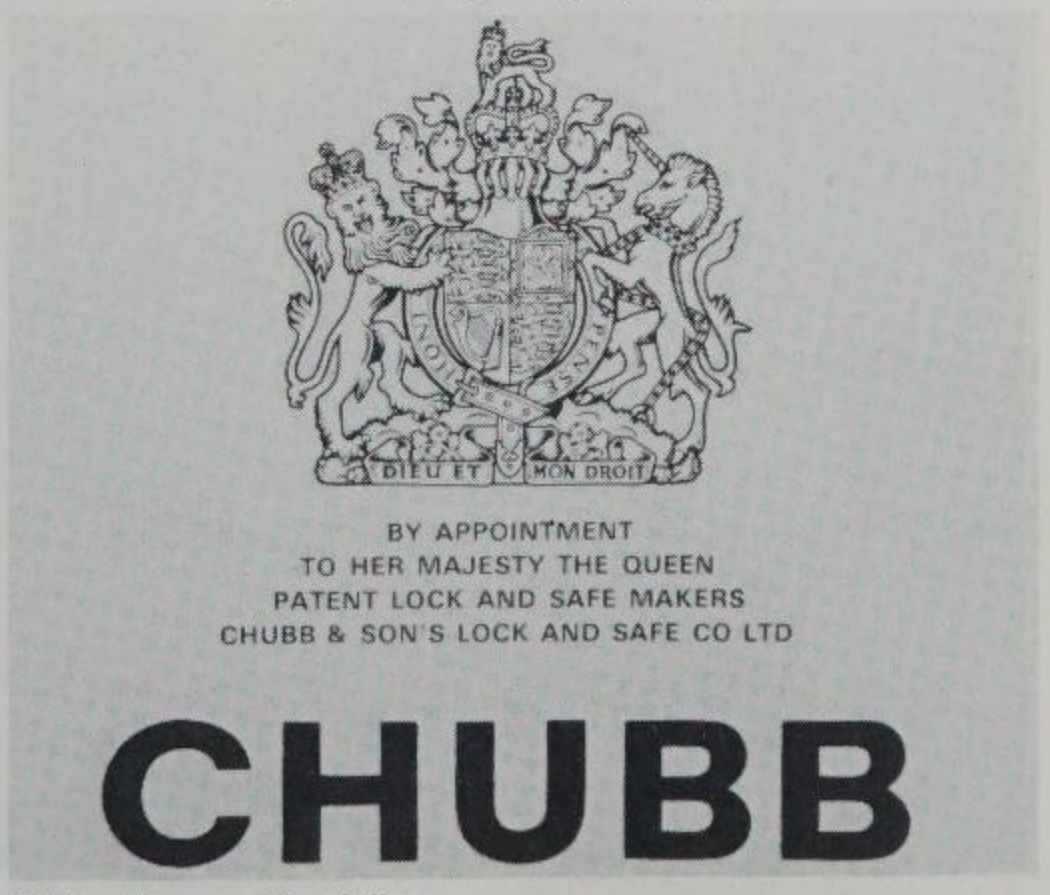
This month we are going to talk about Chubb safes. We will look a at a couple of safes I drilled open, examine some of the differences between them, finishing with a look at the Isolator.

In photograph one, we have a Chubb Trident that was opened at a recent seminar I presided over. Aside from a difference in barrier materials, the Trident and the Banker's Treasury are identical. This safe came in lacking both key and combination, so we prepared to drill. First we side-drilled for the combination lock, then we top-drilled for the keylock, as Larry is doing in photograph one. More on this technique later.

With the safe door open, the Royal Warrant is visible on the inside back panel. (*See photograph 2.*) You can bet there



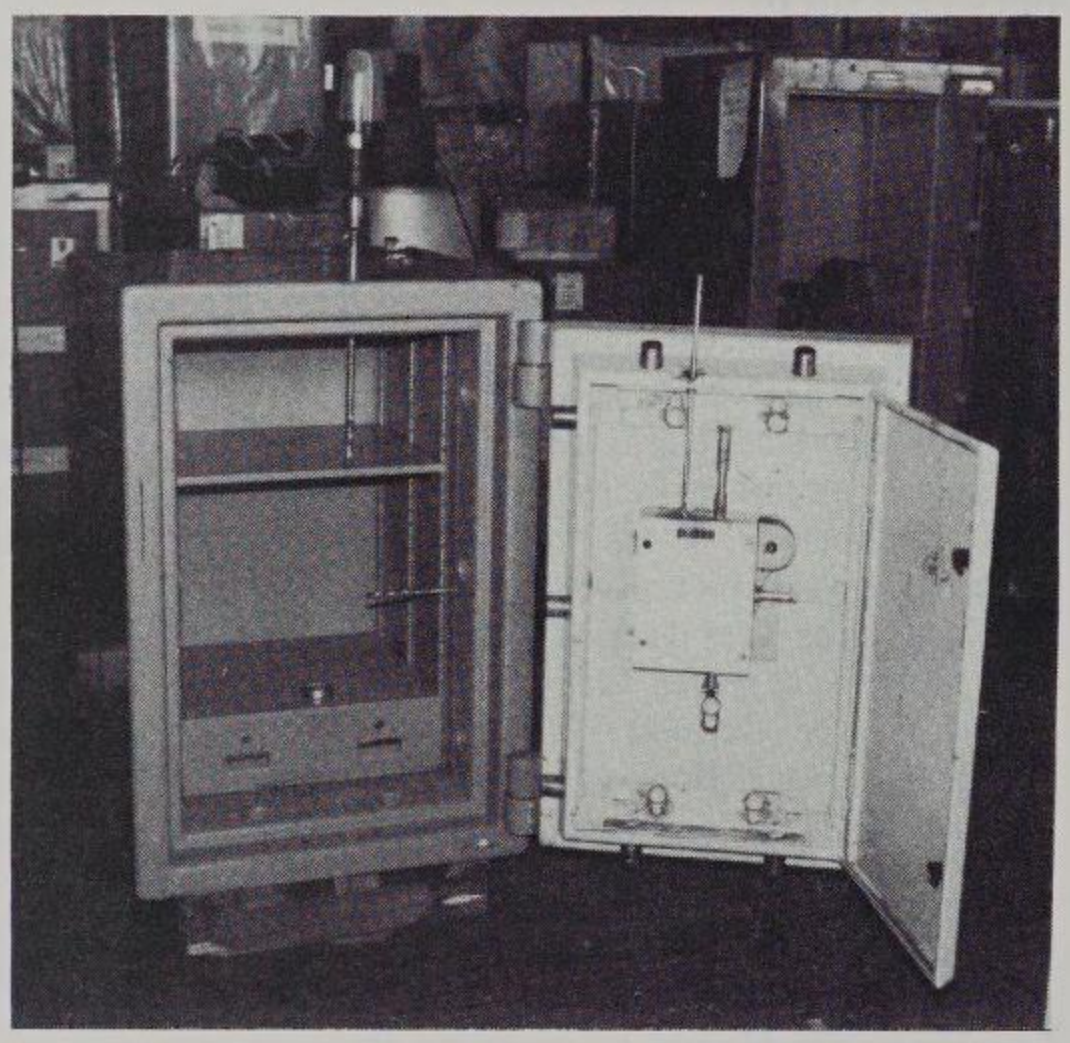
1. The Chubb Trident.



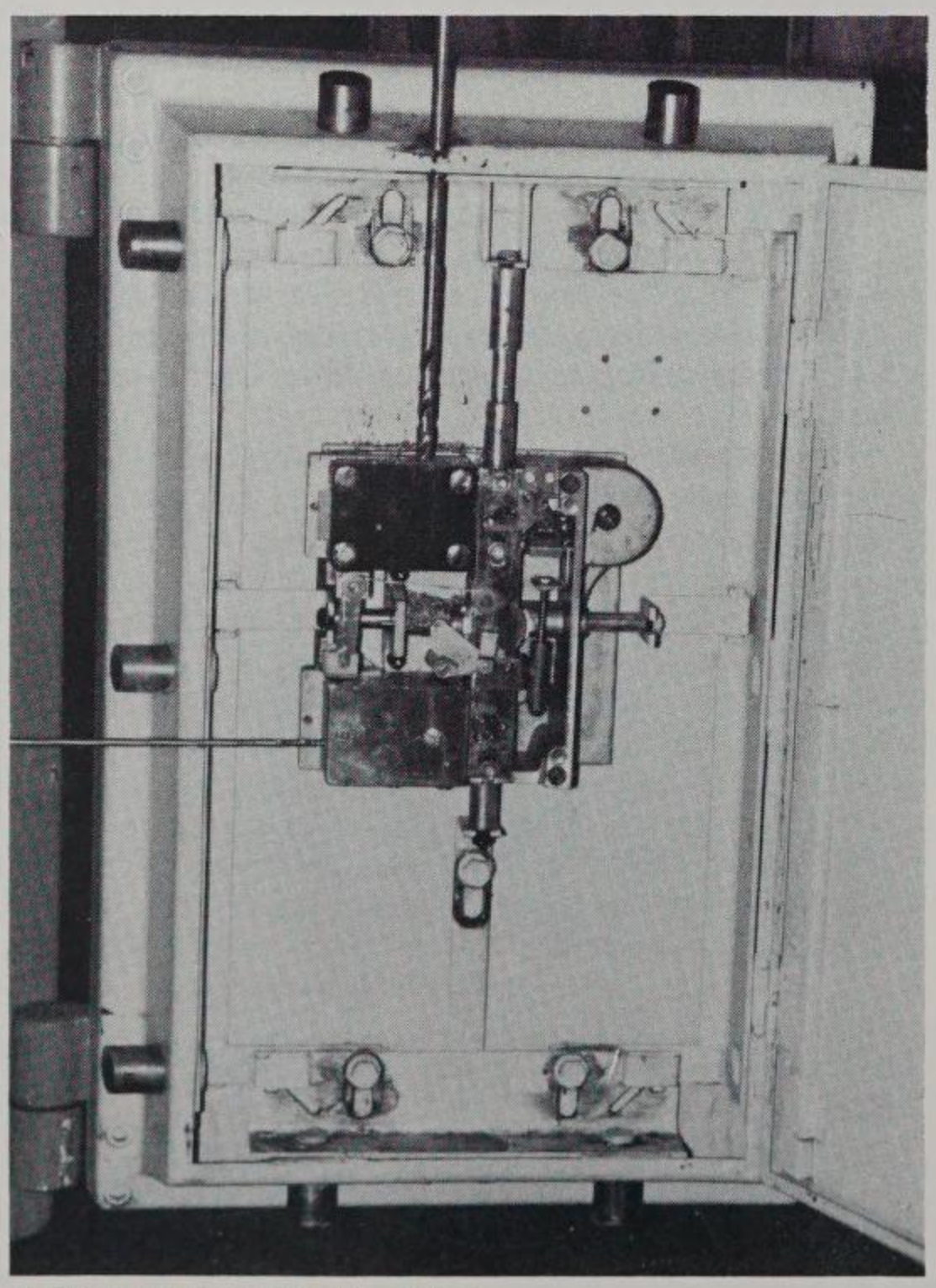
2. Royal warrant is visible.

are a lot of safe companies that would give their eye teeth to have that warrant. After all, you don't just walk in to Buckingham Palace and demand one. Chubb got their's the old-fashioned way by earning it.

In photograph three, the back panel is open, and I have left drill bits in the holes where penetrations were made. The smaller cover over the Isolator is still in place. As you can see, this is a four-way boltwork, with three bolts on both the opening and hinge sides, and two top and two bottom bolts.



3. The open back panel.



4. Close-up view of inside of door.

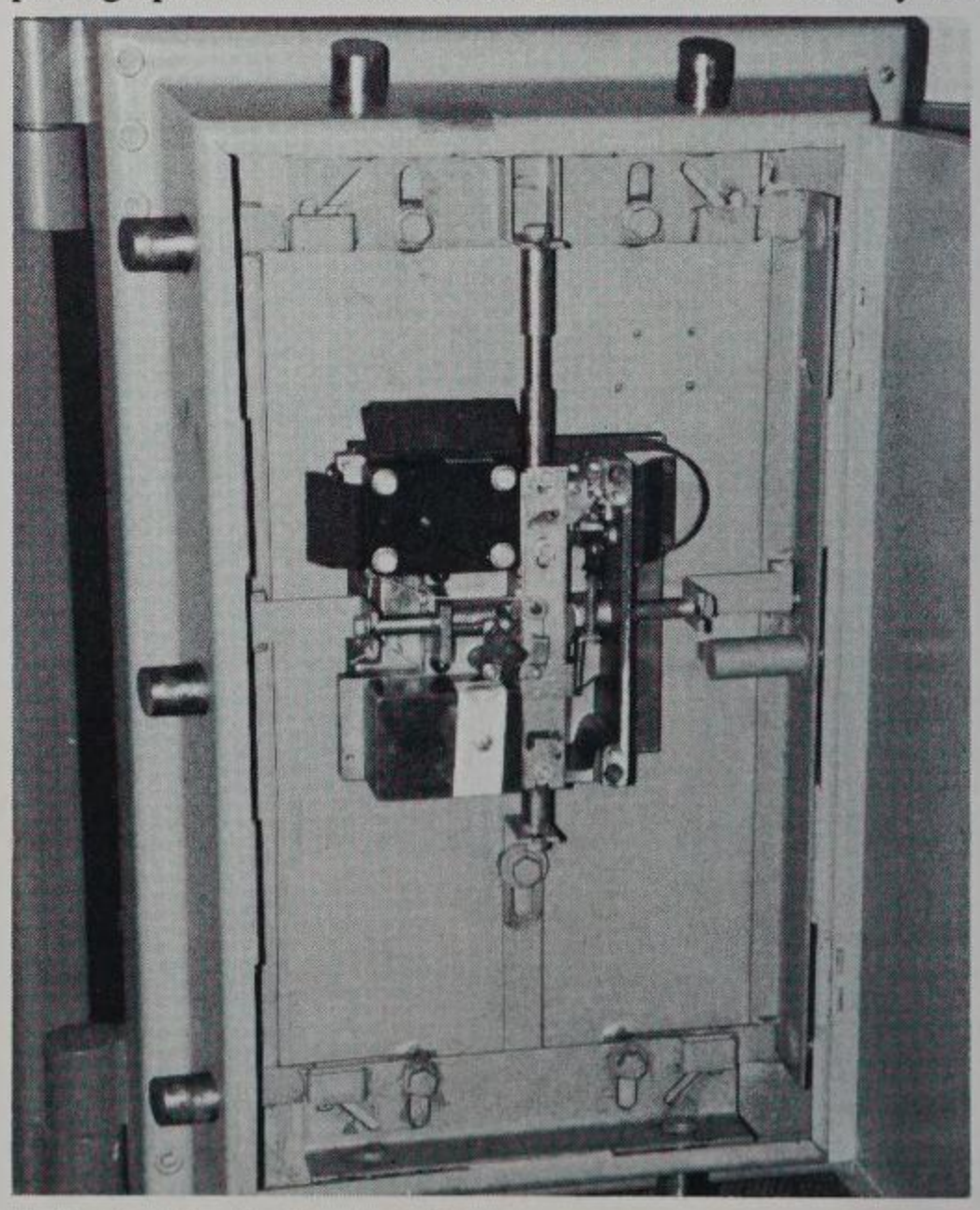
In photograph four, we have a close-up view of the inside of the door with the Isolator cover removed. Coming down through the top is a 1/2" bit; through the side is a 1/4" bit. Those of you already familiar with this model Chubb will notice the absence of any deflectors. Normally Chubb installs three deflectors with each Isolator, to give extra protection to the keylock. But this one not only didn't have any, there weren't even any threaded prep holes for the deflector mounting screws.

In my experience, this is very unusual. Normally if deflectors are missing, it is because someone has consciously removed them. But I am not complaining, it made my job a little less difficult. A Chubb safe with an Isolator is hard enough to drill a hole in and open, without having the additional headache of coping with a deflector.

We will discuss in detail the technique used to open the keylock, but first, we should have a clear understanding of the terms "Isolator" and "deflector." Chubb's Isolator boltwork isolates the handle from the boltwork. In other words, when the safe is locked, the handle spins freely because it is disconnected from the boltwork. Only when both locks are opened does the handle become connected to the boltwork.

The other term I have mentioned without proper explanation is "deflector." In safeman's lingo, a deflector is a piece of steel installed on the inside of the door at an angle, the purpose of which is to deter drilling. I can vouch for the effectiveness of Chubb's deflectors, having tried on two separate occasions to make a successful penetration. Both times I failed miserably, barely scratching either deflector. And this was using a tube to guide and hold the drill bit steady. The bits themselves were custom ground to allow the tips to contact the deflector before the sides did. All to no avail; I had to resort to Plan B both times.

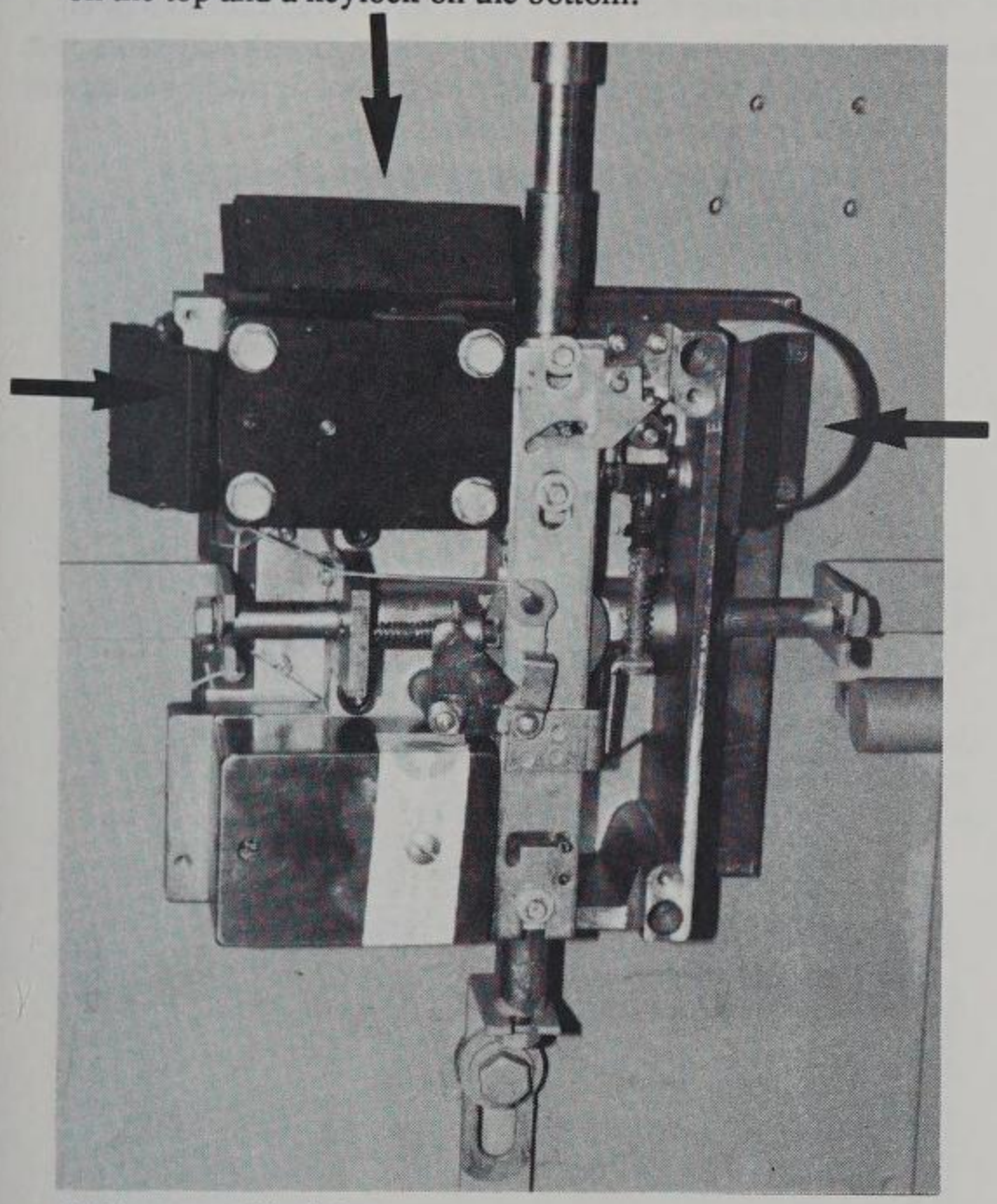
To show you what a deflector looks like, I have included a couple of photographs of another Chubb I drilled open. In photograph five we see the inside of a Bankers Treasury with



5. The inside of a Banker's Treasury.

all three deflectors in place doing guard duty. This safe, a Model 3420, is identical in size to the Trident in the preceding photographs.

Photograph six is a close-up view of the Isolator. The arrows are pointing to the three deflectors. This is the usual set-up, with a keylock on top and a combination lock on bottom. Those of you with Chubb brochures may notice that many of the brochures show a safe with a combination lock on the top and a keylock on the bottom.



6. Close-up of Isolator.

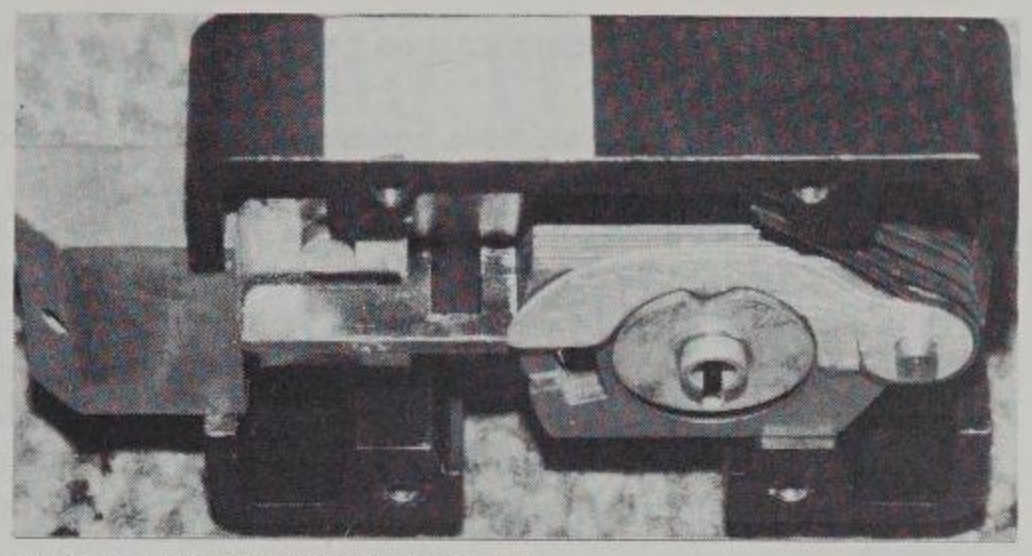
I suspect this was a miscommunication between the graphics department and the technical experts. The reason I say this is that the proper opening procedure is to first open the bottom lock and then open the top lock.

When the top lock is open, the handle is engaged and you can retract the locking bolts. Bear in mind that the top lock cannot be opened unless the bottom lock is opened first. To lock the safe, the handle is rotated counterclockwise to throw the bolts, and the top lock must be locked.

For sake of convenience, say during business hours, you can leave the bottom lock open and use the top lock only. This feature is important to many businesses who frequently open and close their safe. In this case, it only makes sense to have the combination lock on the bottom and the keylock on top. This way, the combination lock need only be dialed open once a day. Quick access can be made using the key, which is much faster than dialing a four number combination. Enough said; let's move on.

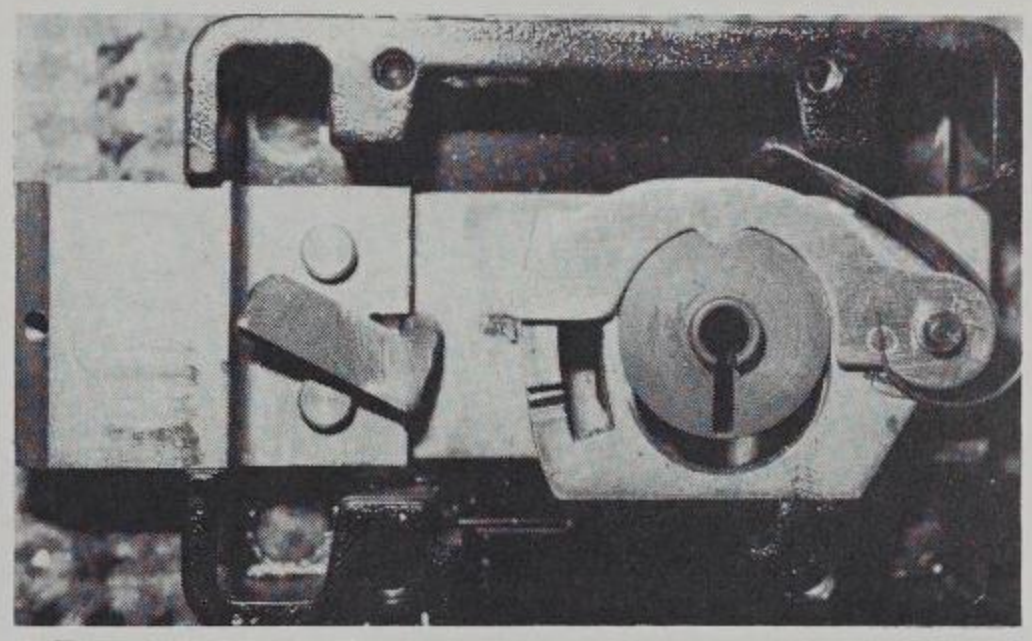
Let's turn our attention to the opening of the keylock. In photograph seven we have an eight lever Chubb keylock just like the one in the safe we opened. The fence, or stump, is U-shaped, and is supported by the lockbolt. The round piece in front of the keyway is the curtain, which makes it near impossible to pick this lock.

In order to pick a lever lock, you need to use a two-in-one



7. An eight lever Chubb keylock.

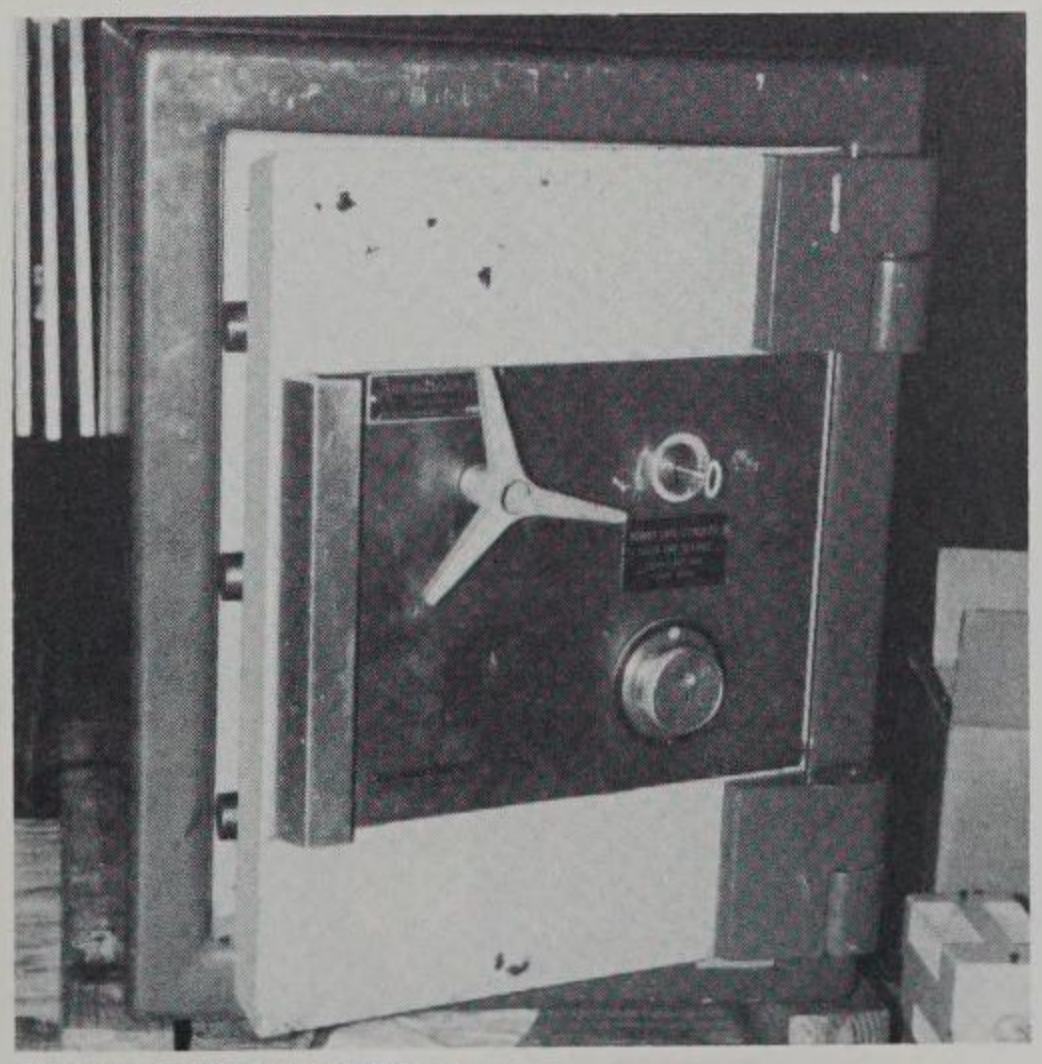
pick. By first putting turning pressure on the lockbolt, you can then raise the levers individually. But the curtain requires that everything be done at the same time, the pick for the levers cannot be raised to a different height then the pick that applies the turning pressure. Simple but extremely effective.



8. Top circled keylock.

In photograph eight, we have the keylock that was top drilled. As you can see, the U-part of the fence nearest the levers was severed from the lockbolt. This was done by a combination of drilling and punching. It is tough to get the fence to break off clean at the lockbolt, but if it doesn't, you can often force it past the bottom lever.

Notice part of the bottom of the lockcase is cut away. As far as I know, the purpose of it is to deter acid attacks through the keyway. With the bottom of the case cut away, the acid



9. A small Chatwood-Milner.

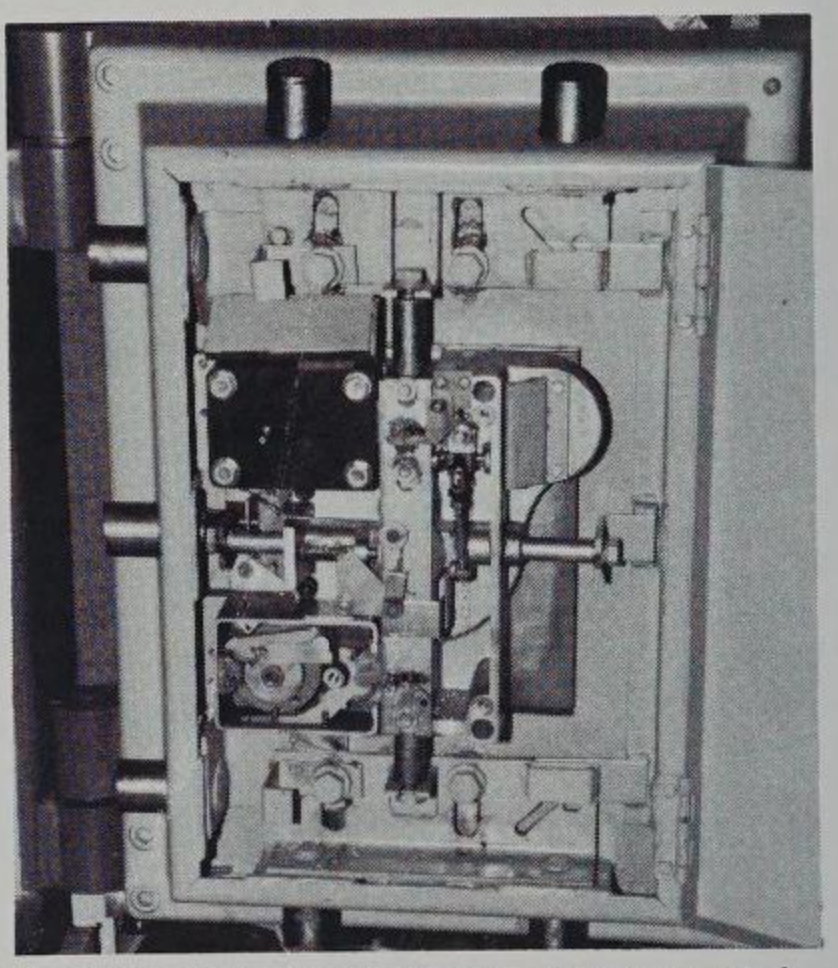
will drip out of the hole rather than eat up the levers and/or the fence.

In photograph nine, we have yet another safe, this time a small (model 2215) Chatwood-Milner made by Chubb. All of the Chatwood Milners with Isolators that I have seen in the United States were sold originally by Acme as the Monarch. This safe was opened by a group of guys in a safe class last year. If my memory serves correctly, Skip Eckert manipulated the four-way combination lock, while Don Spenard and Geoff Cookson drilled through the door, missed the glass(on purpose) and used a scope and a segmented key to open the keylock.

Photograph 10 shows the Chatwood-Milner decal on the inside of the back panel. Chubb's Royal Warrant may be more majestic and prestigious, but Chatwood-Milner's is better looking.

10. Chatwood-Milner decal.

Photograph 11 shows us the inside of the door with the back panel open and the back cover of the combination lock removed. This is the smallest door that comes equipped with an Isolator, it barely fits. Notice there are only two deflectors in this door. Strangely enough, most of the Chatwood-Milner's I have run across don't have any deflectors at all. I know they come from the Chubb factory with deflectors, but someone, somewhere, sometime, for some unknown reason decided to remove them. I wonder why...



11. Inside of the door with back cover removed.

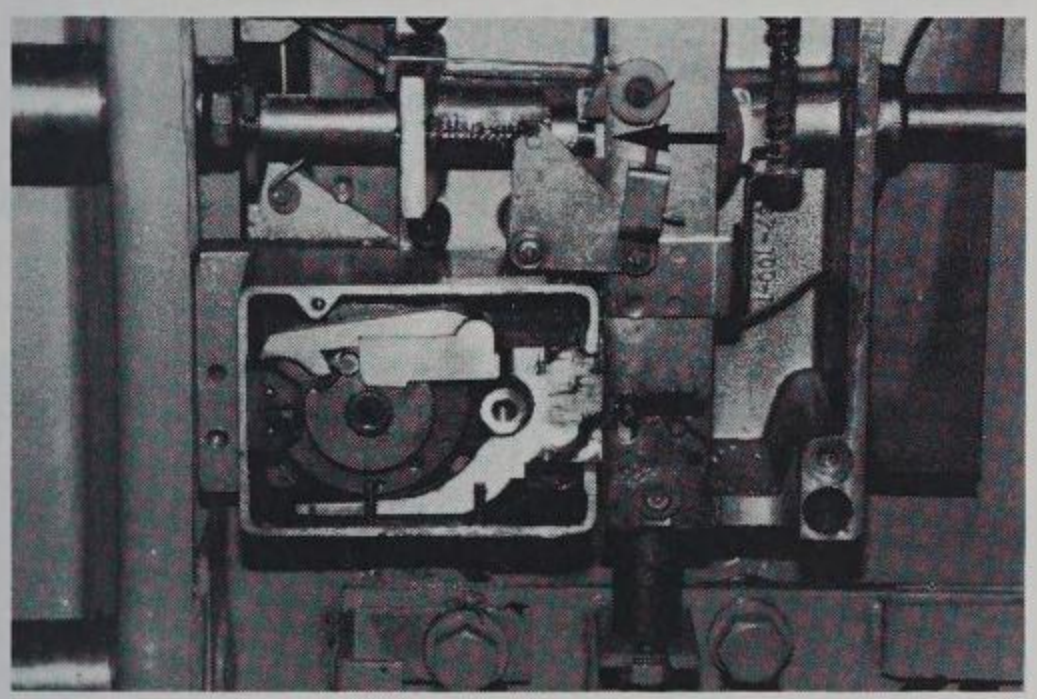
Chubb Safe Opening II

"If the glass is broken, the cord goes limp, and the relocker stays in the locked position. The top lock can be unlocked, but will not retract the relocker."

by Dave McOmie

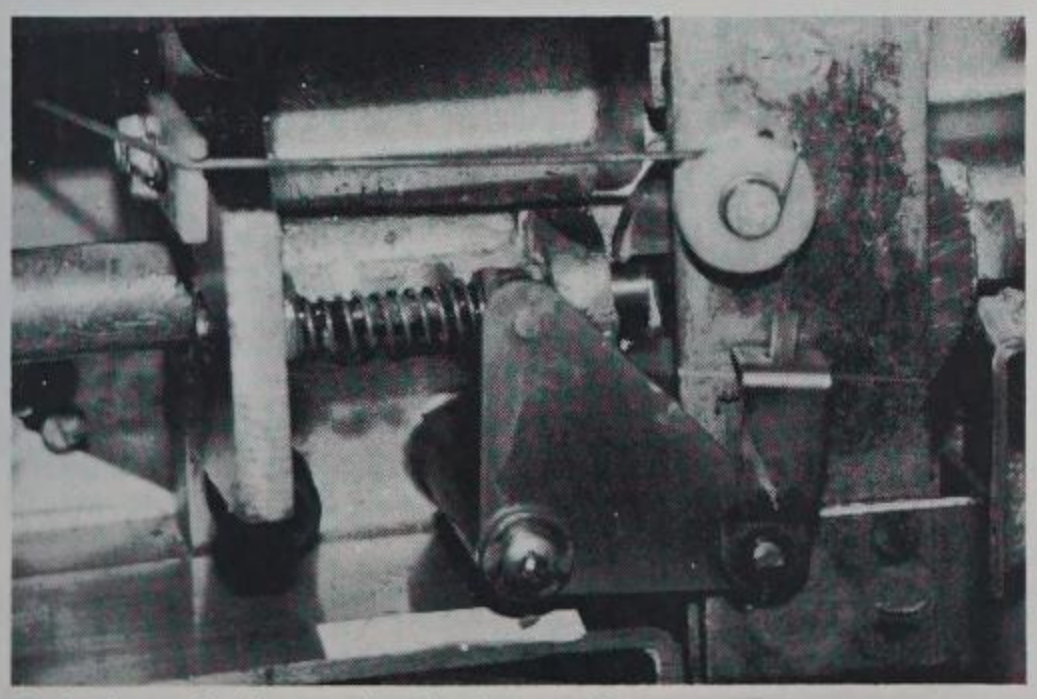
This month's article is a continuation of Dave's article from the November 1990 issue. Part one was titled Chubb Safe Opening.

In photograph on e the combination lock has been opened, but the keylock is still locked. How do I know the key lock is still locked? Because the active relocker that is controlled by the keylock is still engaged. (See arrow.)



1. The combination lock has been opened.

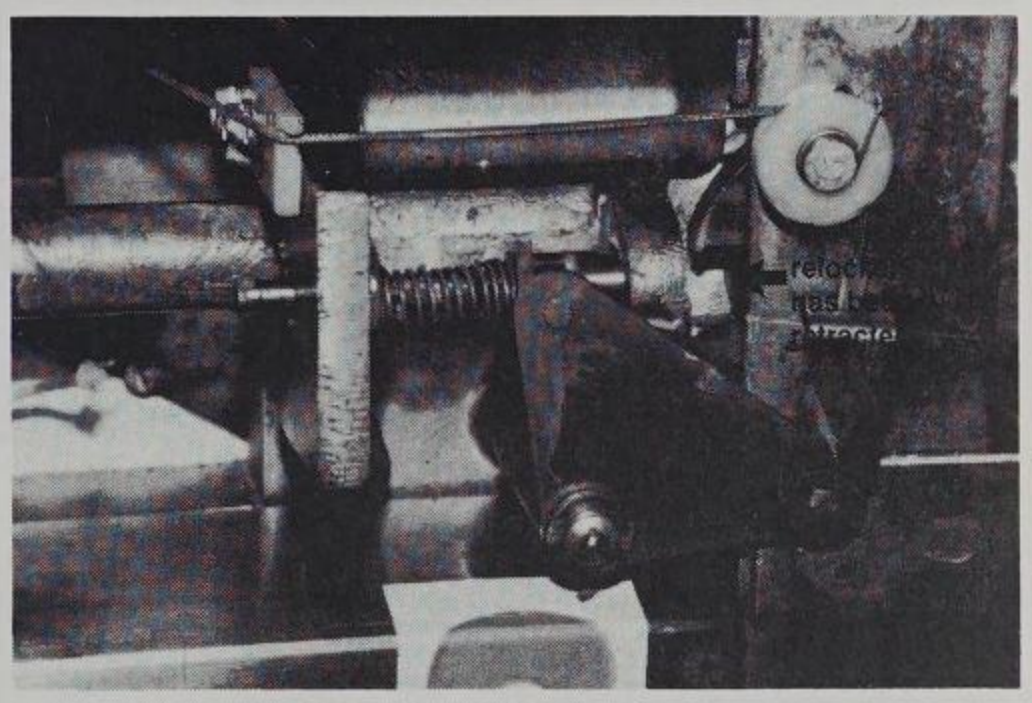
Let's zoom in on that active relocker. In photograph two,you can see it projecting into a slot in the round piece.



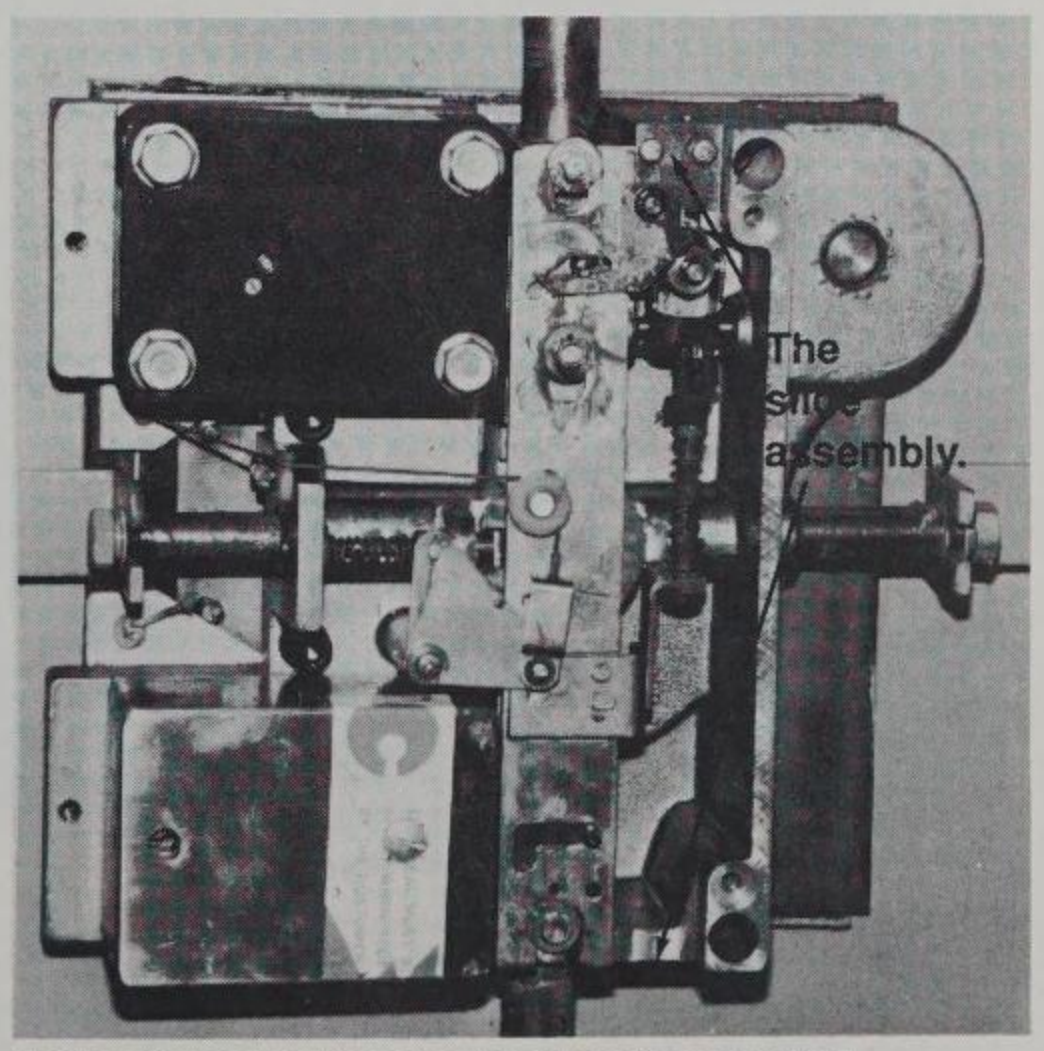
2. Active relocker projecting into a slot.

Chubb calls this round piece the dogging disc. Notice the relocker cord looped around the nylon pulley. This cord, which is actually Terylene braided line with a breaking strain of 100 pounds, also loops around the glass plates under the locks. If the glass is broken, the cord goes limp, and the relocker stays in the locked position. The top lock (keylock) can be unlocked, but will no longer retract the relocker. In this case, the relocker must be drilled.

If everything is working like it is supposed to be, the active relocker retracts from the slot in the dogging disc each time the top lock is opened. (*See photograph 3.*)



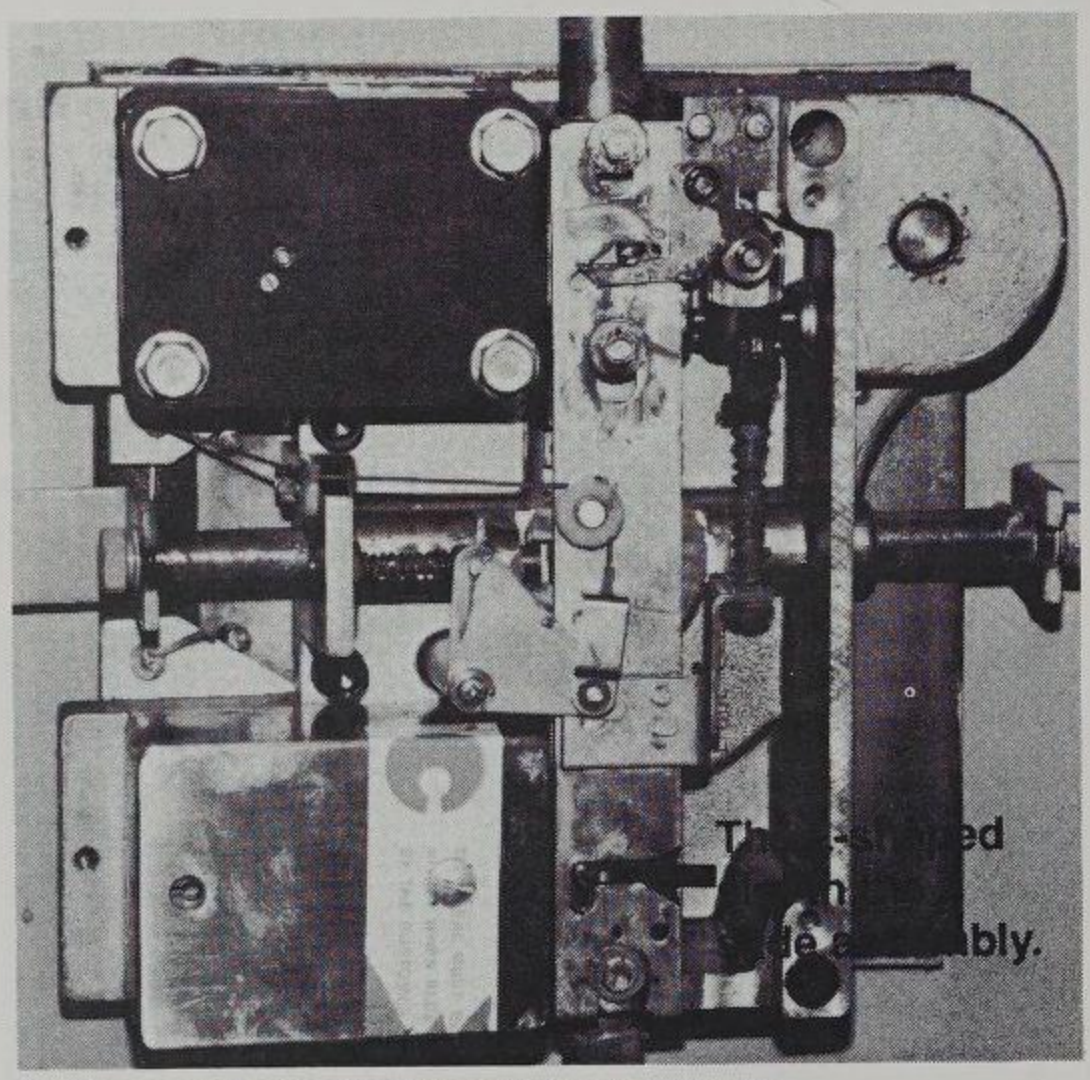
3. The active relocker retracts from slot.



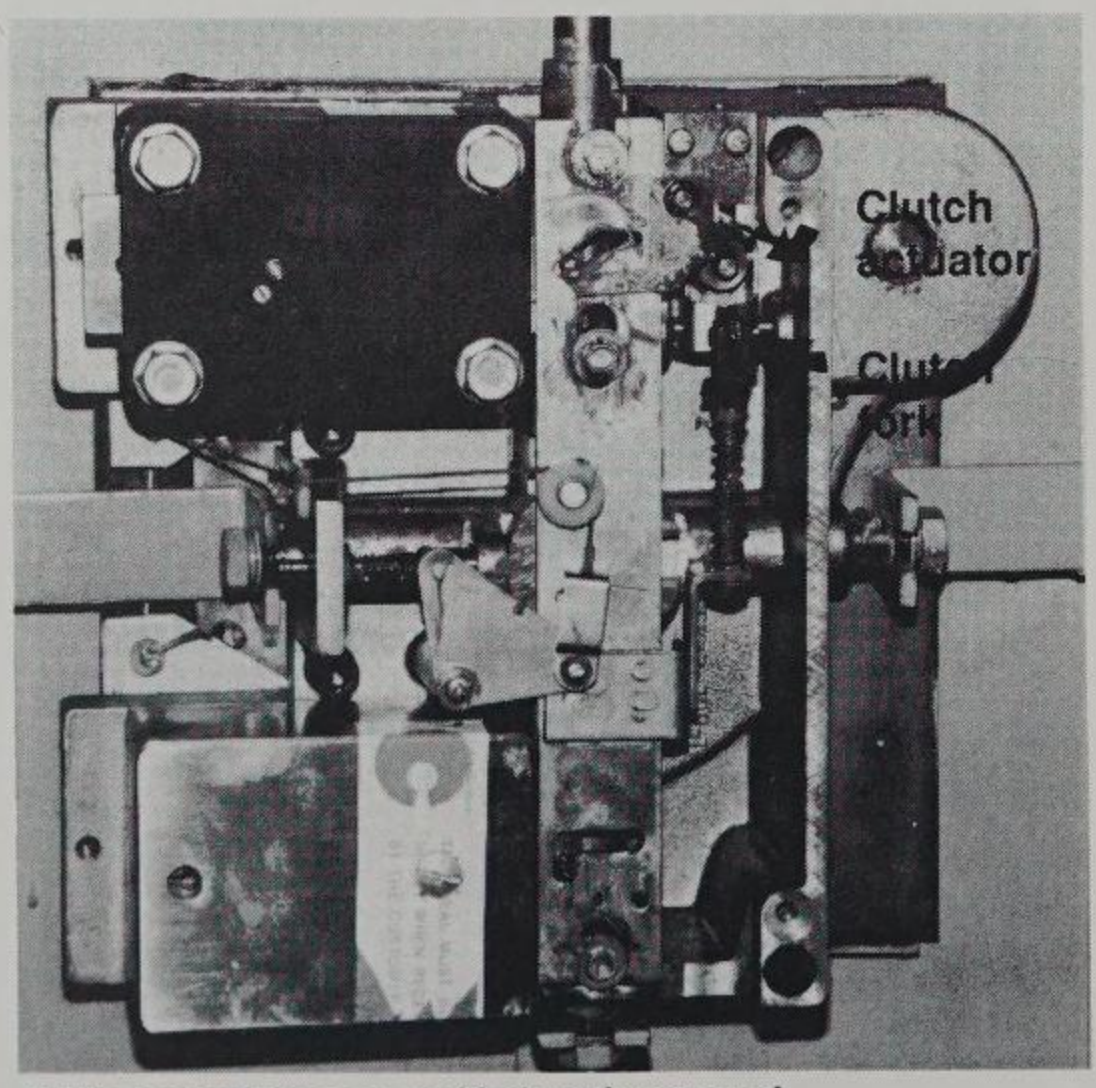
4. The extended boltwork and both locks are locked.

Okay, now that we understand the relocker, let's back-up and watch everything work. In photograph four, the boltwork is extended and both locks are locked. Notice the position of the relocker.

In photograph five, the combination lock (the lower lock) has been dialed open. Notice the position of the relocker is unchanged. The combination lockbolt has two jobs. In the locked position it blocks the bottom bolt-bar from retracting, and it also prevents the slide assembly from raising up. (The slide assembly is the foot-long piece about 1-1/2" wide that can be seen just to the right of the locks. It moves up and down, and is controlled by the top lock.)



5. The combination lock has been dialed open.

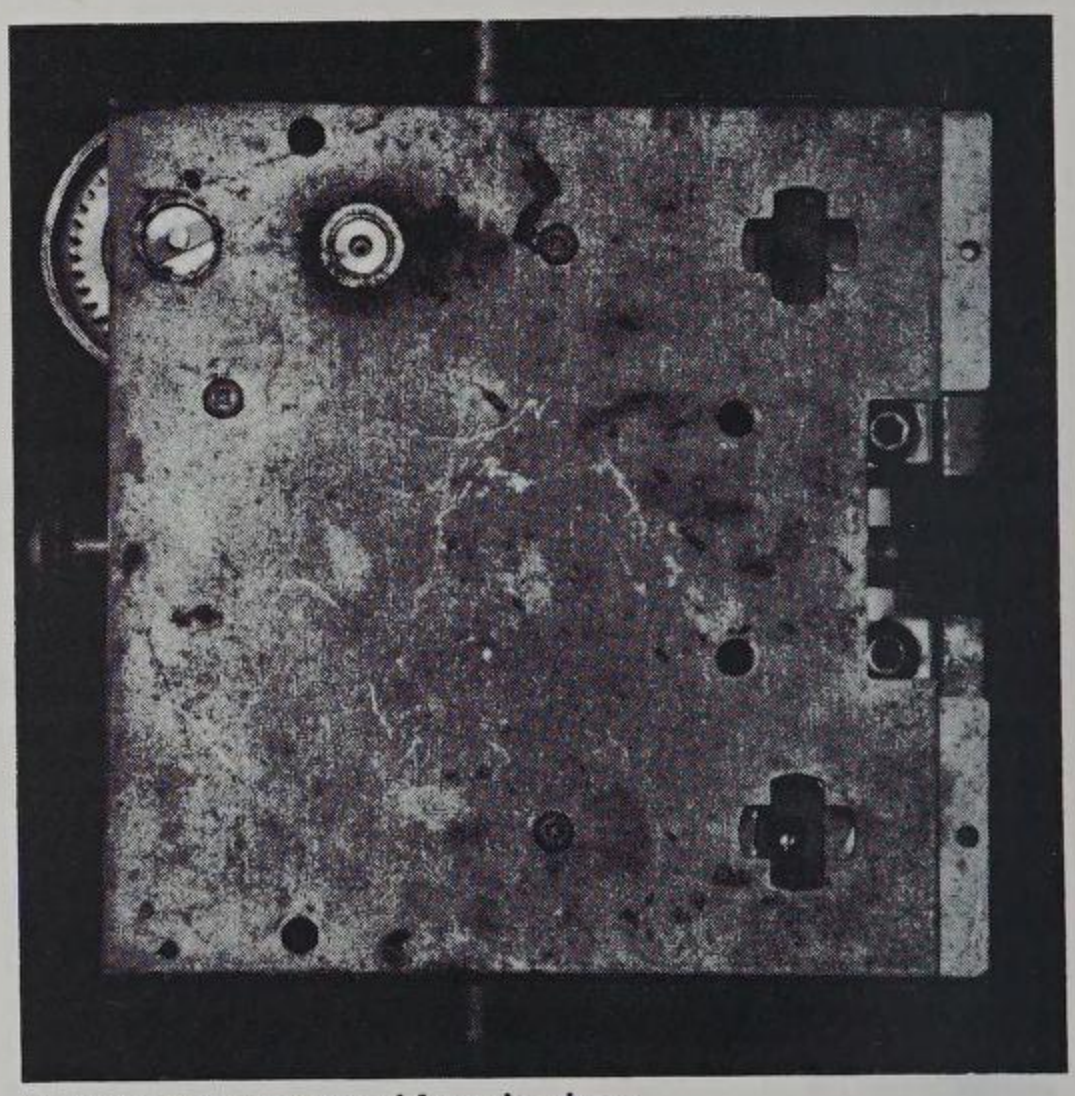


6. The keylock is open and boltwork retracted

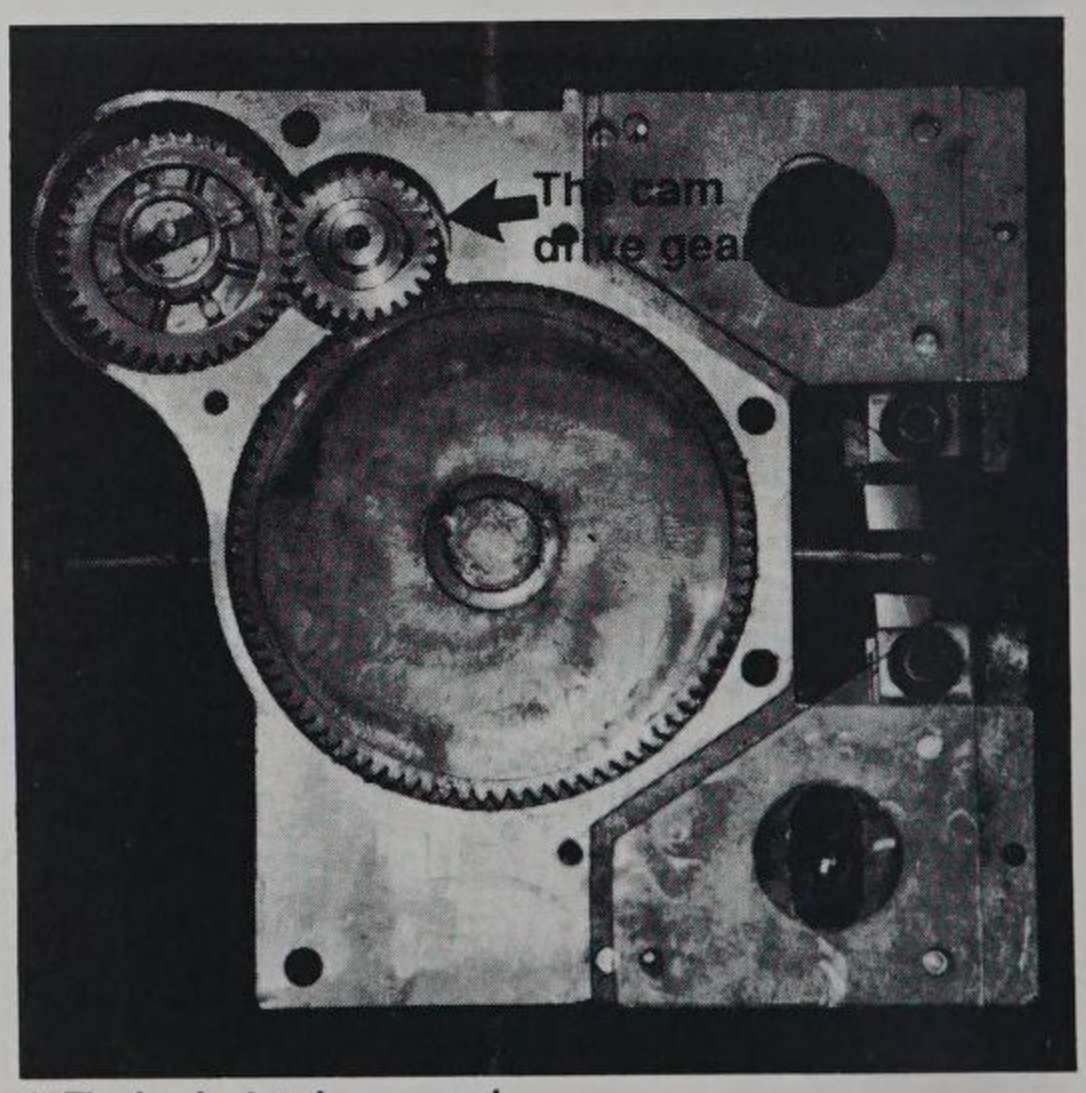
Take note of the L-shaped slot in the slide assembly (see arrow). The pin protruding out of this slot is threaded into the lockbolt. With the lockbolt retracted, as in this photograph, the short side of the L-slot will allow the slide assembly to move in an upward direction. This is why the bottom lock must be opened first. The top lock cannot raise the slide assembly until the bottom lockbolt is retracted, positioning the pin at the base of the L-slot.

In photograph six, the keylock has been opened and the boltwork retracted. The lockbolt of the keylock has two jobs. It blocks the top bolt bar from retracting, and it has a pin in it that rides in a slot in the slide assembly. When the keylock is opened, the pin in the lockbolt raises the slide assembly.

At this point, several things happen: the triangular shaped (what Chubb calls a dogging lever) in the middle of photograph six, pivots, retracting the active relocker (what Chubb calls a dogging plunger) from the dogging disc.



7. An Isolator removed from its door.



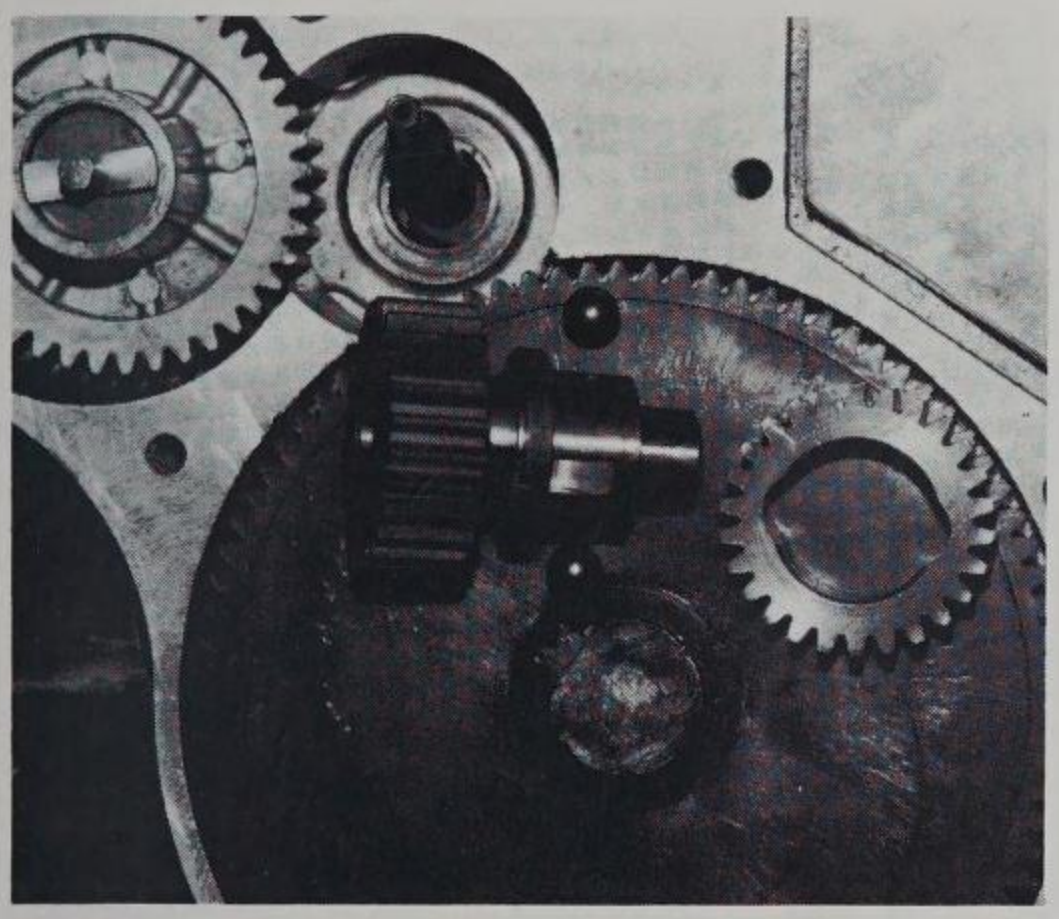
8. The back plate is removed.

The other important thing that occurs as the slide assembly

raises has to do with un-isolating the handle from the boltwork. There are a lot of parts involved here, but the important thing is that as the slide raises, the clutch fork pivots, and the clutch actuator pops in (see arrows) which ends up engaging the cam drive gear.

In photograph seven, we have an Isolator that has been removed from its door. We are looking at the back plate that butts up against the door when it is installed. Notice the bolt bar controls rods top, bottom and both sides.

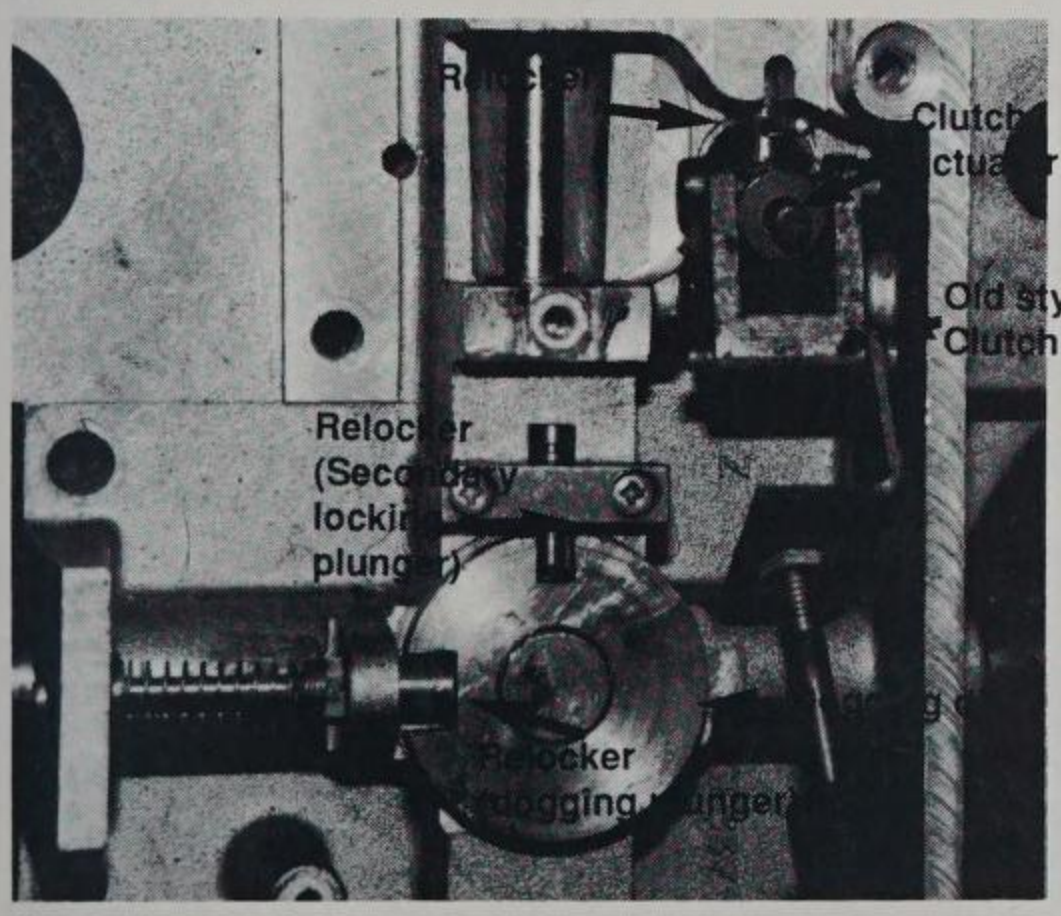
In photograph eight, the backplate has been removed,



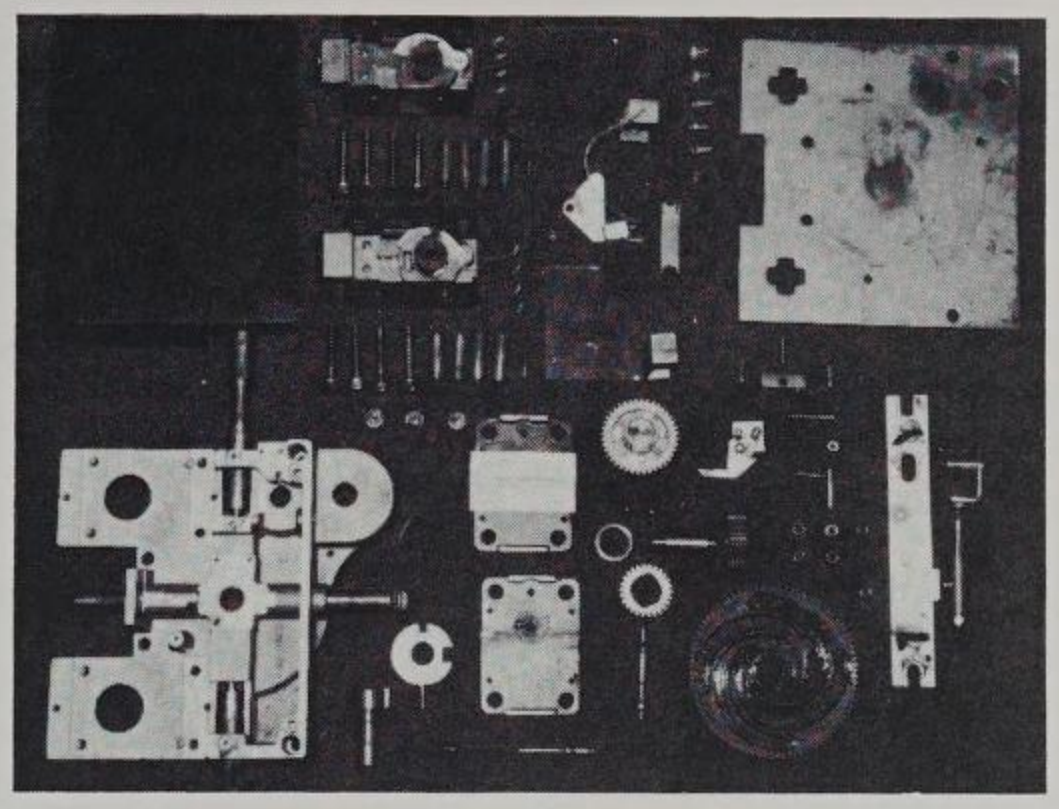
9. Close-up view of cam gear removed.

giving us a clear view of the gearing arrangement. The big gear in the middle controls the four-way boltwork. The gear at the top, far left, is connected to the handle. The gear in between the bigger two is the cam drive gear responsible for isolating the boltwork from the handle.

Notice the glass plates protecting the locks on the right side of photograph sight. Also notice how the corners are cut



10. The slide assembly removed.



11. Disassembled Isolator.

away on the glass plates. This is how Don and Geoff were able to drill through the door without breaking the glass.

In photograph nine, we have a close-up view with the cam gear removed, exposing two ball bearings. When the safe is locked, the shaft in the middle of the cam gear spins freely when you rotate the handle. But when the top lock is opened, raising the slide assembly, which pops the clutch actuator in, the two ball bearings freeze the cam gear to its shaft. Thus the handle can be rotated clockwise retracting the boltwork. Also visible in this photograph is part of the glass plate under the top lock.

In photograph 10, I have turned the Isolator over and removed the slide assembly. The active relocker (dogging plunger) that we discussed earlier is visible, and so is the secondary locking plunger. Both prevent the dogging disc from moving. Remember, the dogging disc is attached to the big gear that controls the boltwork. There is yet a third relocker to mention. At the top of photograph 10, to the right of the center, you can see the clutch actuator.

You can also see the spring-loaded pin that has dropped down into a slot in the actuator, preventing it from popping it. And if the actuator cannot pop in, the ball bearings will not connect the cam gear to its shaft, thus the handle will freely spin until you drill for and left up the relocker so the actuator can pop in.

You may notice that the clutch fork that controls the actuator is different than the one in the previous photographs. This one is old style, the clutch fork in the previous photographs is new style. The new style fork is much more reliable because the ancillary linkage connects to the center of the fork, rather than the edge. Also the placement of the pivot point makes more sense. Be sure and check the pivot screw for tightness. If it comes out, you have a lockout.

In photograph 11, we have a disassembled Isolator for your inspection. It looks foreboding, but it really isn't all that bad once you come in contact for it.

There is a brief look at the Rolls-Royce of safes. An English Chubb with an Isolator is indeed my personal favorite, and one day I will own one.§

When Chubb saw this article, they immediately began producing full glass plates, and stopped cutting the corner off the edge of the glass, effectively closing the loophole that was used by Cookson, Spenard and many others.

The Hall's Banker Safe

"Luckily for me, there are others who share my love for the oldies-but-goodies. We decided to make a party out of the opening."

by Dave McOmie

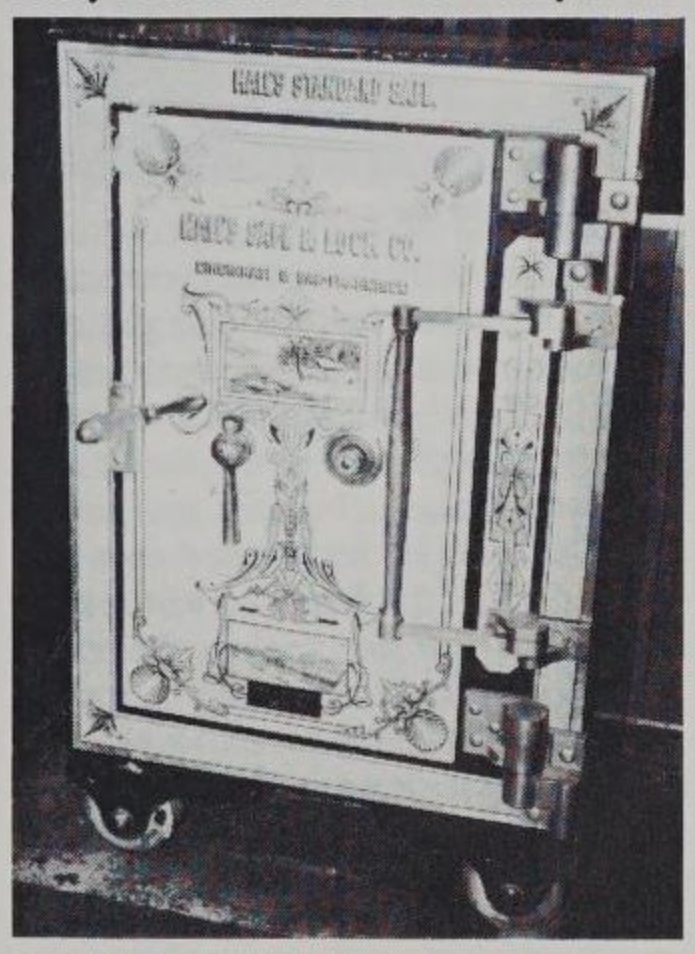
I love antique safes. A lot of the old Banker's Safes and Jeweler's Chests are masterpieces of human ingenuity. All the brass, bronze, nickel chrome steel, and intricate boltwork designs just make my motor purr. Except when I have to open one. With all the differences and variations between manufacturers, it is hard to keep them all straight.

Every time I open one, it reminds me to be thankful for carbide drill bits and high-speed drill motors. Good grief, it must have been sheer hell being a safeman back in the early days. Can you imagine trying to penetrate manganese without modern equipment? As many of you know, it is no picnic even with the advantages of modern technology. And to delaminate a door from the front, which is how many safes were opened in yesteryear, strikes me as a grunting, brute laborer's nightmare.

Luckily for me, there are others who share my love for the oldies-but-goodies. One of my best friends in the business, Don Spenard, safe wiz, is also a bona fide antique safe nut. Don lives 168 miles to my north, in Seattle. During the day, he works on jail locks (from the outside of course) and opens telephone coin boxes for Argen's Safe and Lock. During the night he dons a mask and cape, and opens safes for Solly's Safe & Lock.

One night before last Thanksgiving, Don called and told me that Solly had a Hall's Banker's Safe that needed to be opened. As fate would have it, I was due to be in Seattle that same weekend, so Don and I decided to make a party out of the opening.

Don and I met at the shop after hours, and went in for a look at our quarry. Photograph one shows the Hall's in its splendor. In near-perfect condition, it had been on display in the lobby of a Seattle bank for nearly a half



1. Hall's Banker's safe.

century. Since it wasn't being used, it was never opened, and somewhere along the way, the combination was lost. So the bank sold the safe to Solly.

Photograph two shows the small mural that was painted just above the dial and handle. Look at that mural. What a beauty. What art. What craftsmanship. On the upper hinge is stamped: J.L. Hall's Patent Feb. 25, 1873.

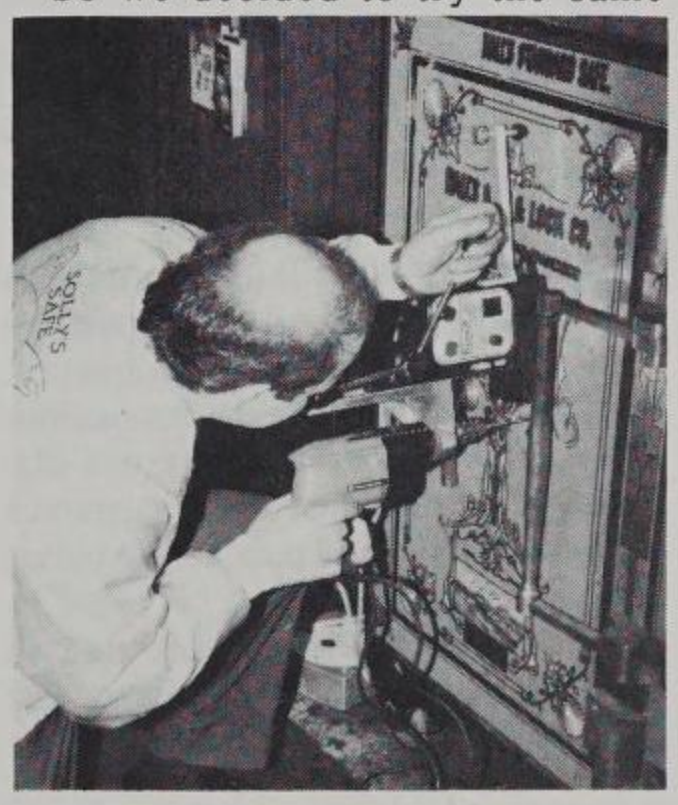
Don and I talked over various

2. The small mural above dial and handle.

methods of opening the Hall's. We knew from the free-spinning handle that there was a J.L. Hall's Premier Lock on the inside. The Premier lock is one of the more difficult locks to open that you will ever run across. I use the word "difficult" not to describe how hard it is to drill, but rather to describe the difficulty in opening the lock *after* the hole is drilled. There are five wheels, and wheels #1 and #2 are inside a shroud-like part of the back cover. This shroud makes the first two wheels extremely hard to see, even with the aid of a straight-view scope.

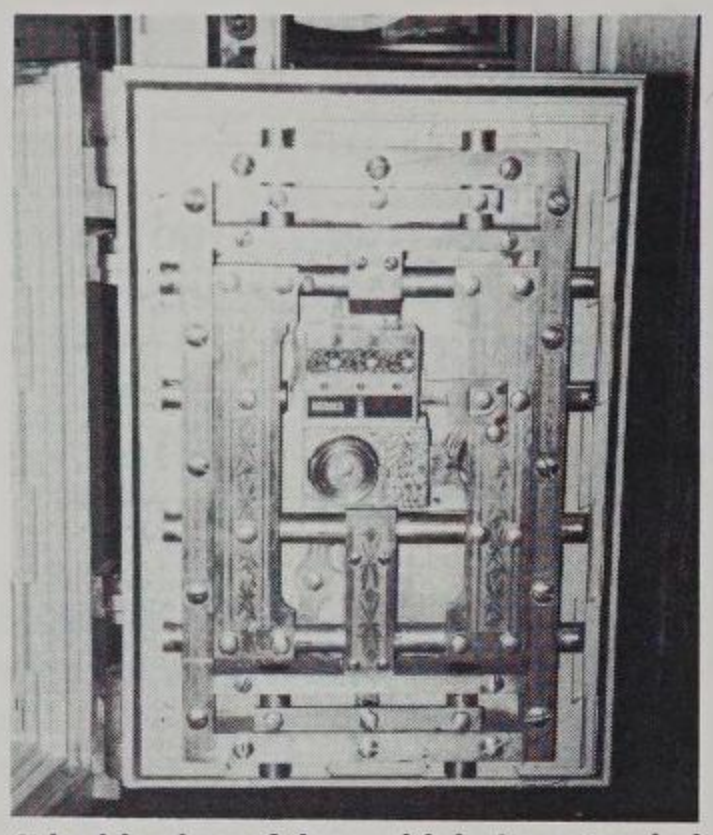
Don had just opened a Hall's with a Premier, and had good luck with a different technique than my favorite scope and transfer method. He had drilled right under one of the levers (that's right, there is more than one lever in this lock, as we will soon see) and probed the wheel gates under the fence with an ice pick.

So we decided to try the same

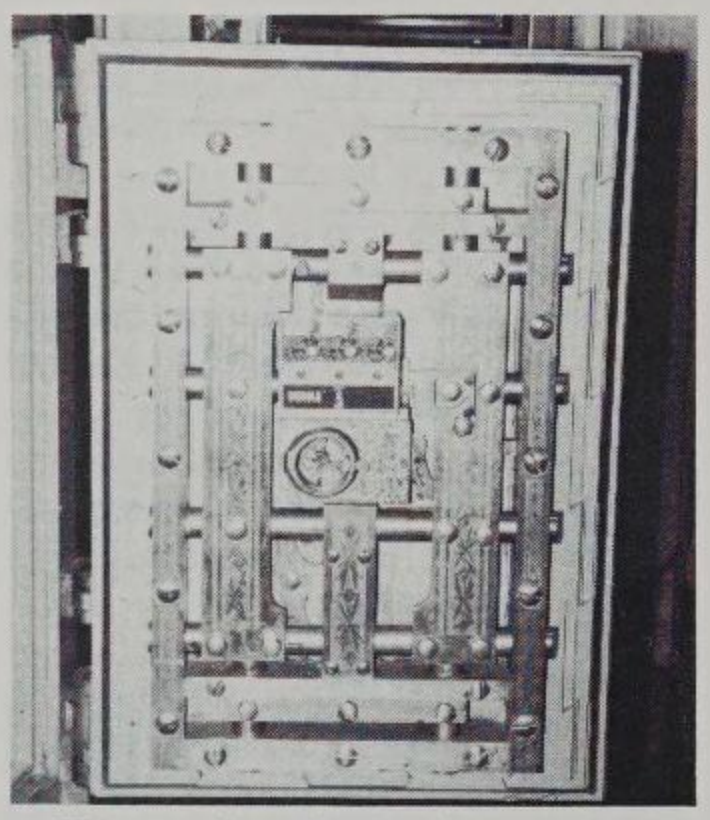


3. Drill above the upper dial ring hole.

technique on the Banker's Safe. But first, we had to determine which size Premier we were dealing with. There are at least three sizes that I am aware of, with wheel diameters differing from size to size. Don and I agreed that this one was probably a big one, so we backed out the screw from the center of the 70# dial, and removed the dial and ring. Measuring straight up 1-1/8" from dial center, we center punched our drill point just above the upper dial ring screw hole. Don attached his Magitron magnetic drill press and began to drill. (See photograph 3.)



4. Inside view of door with bolts extended.



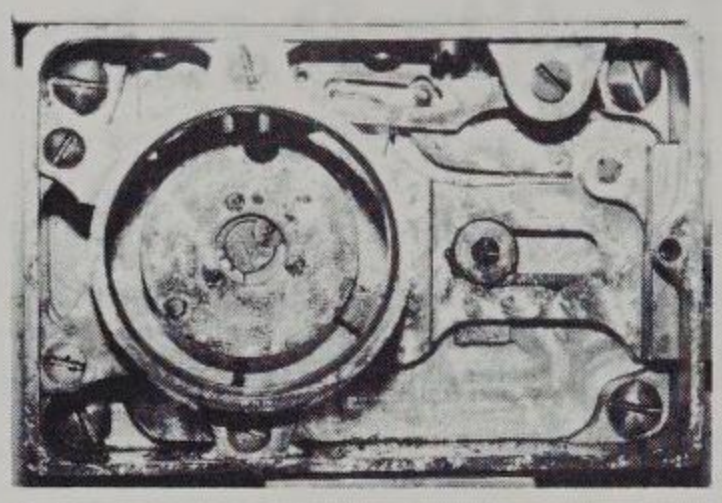
5. The combination lock opened with locking bolts retracted.

Penetration went fairly smooth for about an inch. And then we hit something neither of us expected. Sandwiched in between the laminations was a punchproof and pullproof dial collar, 2" in diameter, and I guarantee you, no one has ever punched or pulled one of these spindles.

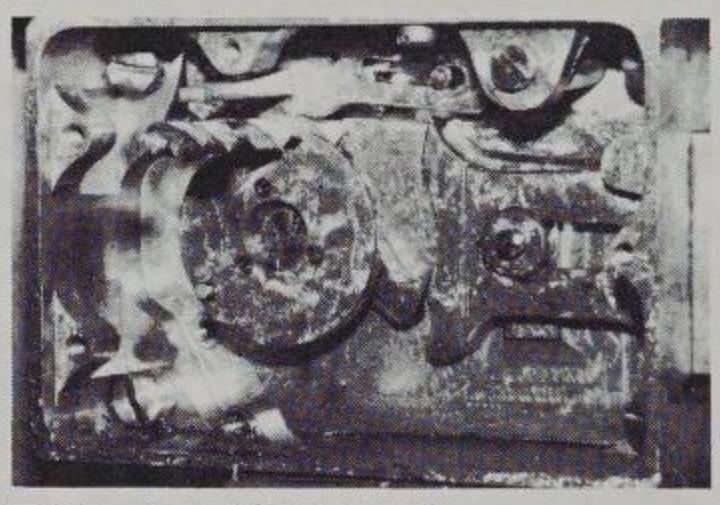
Being real men, we decided to continue with the hole. We knew that once the hole was complete, turning the dial would also turn the punchproof collar and block the hole. But since we were going to probe the wheels around without turning the dial, we reasoned that this would be okay. We could probe the wheels around with an ice pick, without turning the dial and blocking our hole.

We drilled through hardened materials that ranged from hard to very hard. Finally, after 3-5/8 tough inches, we got through to the lockcase. It was time to probe.

So we probed and probed and probed and probed and probed. And then we probed some more. One of the problems was the depth. From the face



6. Back cover and wheel pack removed.



7. The shroud is removed.

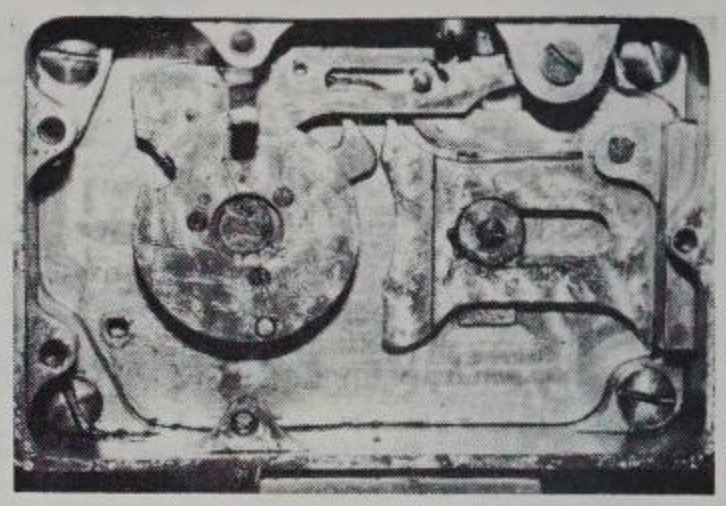
of the door to the last wheel was almost 6". This makes for difficult probing. But to make a long story not quite so long, we finally got it. I think it was all the encouragement from Solly that enabled us to get it without resorting to a second hole. He really believes in us.

In photograph four, we can see the inside of the door with the bolts extended. This is a four-way boltwork, which means there are active bolts on all four sides. From an antique buff's point of view, there is only one thing marring this photo: The modern Diebold timelock mounted right above the combination lock. Rats. I wish the original Consolidated Timelock was still there.

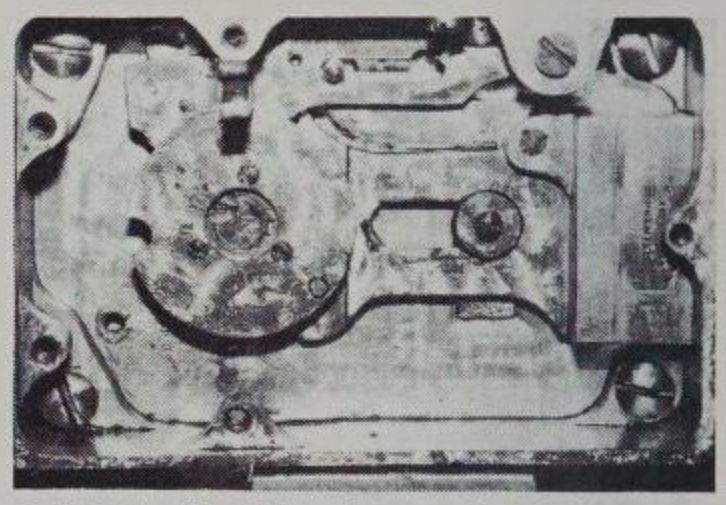
In photograph five, the combination lock has been opened and the locking bolts retracted. On a four-way boltwork such as this, the locking bolts on all four sides retract. Notice the position of the lockbolt and its linkage.

Let's zoom in for a look at the Premier lock. In photograph six, the back cover and wheel pack have been removed. You can see the shroud that I mentioned earlier. This is the round looking thing through which we can see the driver. Bear in mind, that the driver in this lock is about 2" in diameter, and the wheels are 2-3/8" in diameter. The bottom two wheels of the wheel pack (which are the first two numbers of the combination) are hidden in this shroud; and the shroud fits very tightly over the wheels, making it extremely difficult to see wheels #1 and #2.

In photograph seven, the shroud has been removed. A drill bit has been stuck in the hole so you can see where



8. The lockbolts in extended position.



9. The lockbolt has been retracted.

we drilled. We had to drill a little bit of the driver to see the wheels, but nothing was damaged.

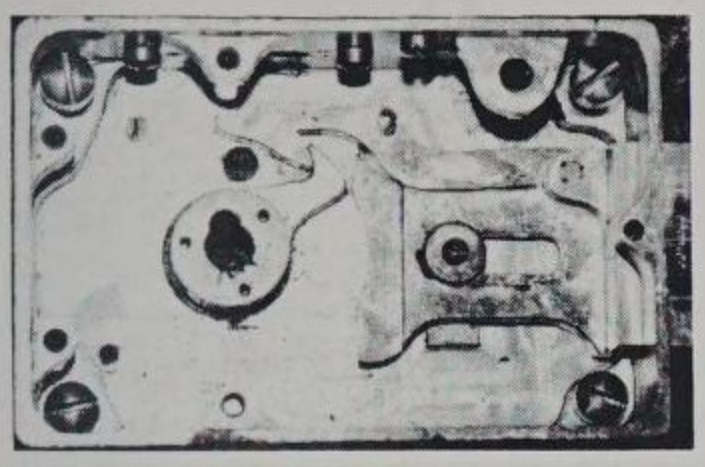
Now let's unlock the Premier. In photograph eight, the lockbolt is in the extended position. The fence can be seen just above the driver. Notice two things in this photograph: The position of the fence and the position of the lockbolt. Even though most of the lockbolt has been cropped out of this photograph, we can follow its movement by watching the part of the lockbolt that is inside the lockcase.

In photograph nine the lockbolt has been retracted, but the fence hasn't changed position. How so? To answer this question, we need to remove the driver and the visible lever. While I am busy with a screwdriver I can bring to your attention the writing on the lockbolt. You can see some of it in this photograph. On the lockbolt reads:

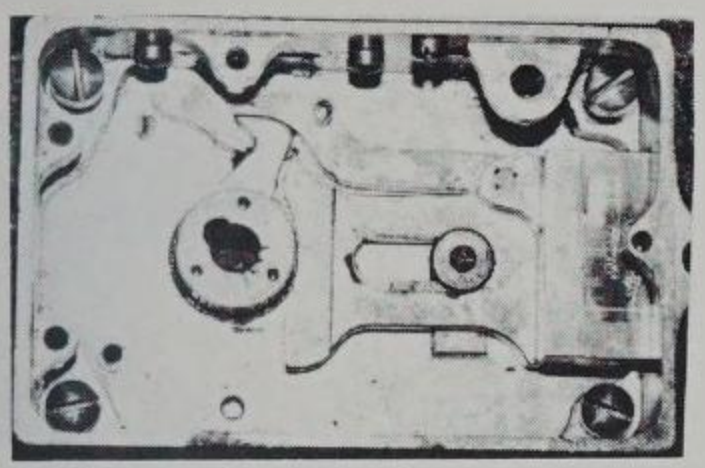
J.L. Hall's Patent, Sept. 7, 1869, PREMIER.

Notice the patent date on the lock is different than the patent date on the upper hinge. I guess that makes sense, after all, hinges are not the same as locks.

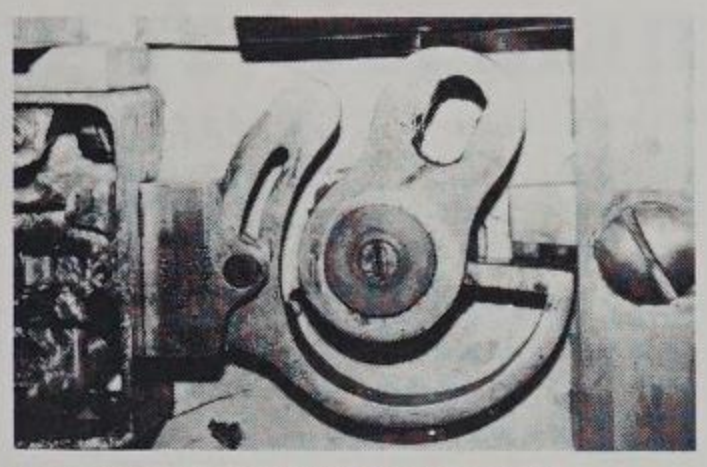
Okay, the driver and lever have been removed, as we can see in photograph ten. But there is another lever and driver still in the lock. We can see the hook part of the driver swinging around to hook the nose of the lever. Notice this lever does not have a fence. It doesn't need one. When the fence on the other fence drops into the wheel gates, it allows this fence to drop down and be hooked by the driver, retracting the lockbolt.



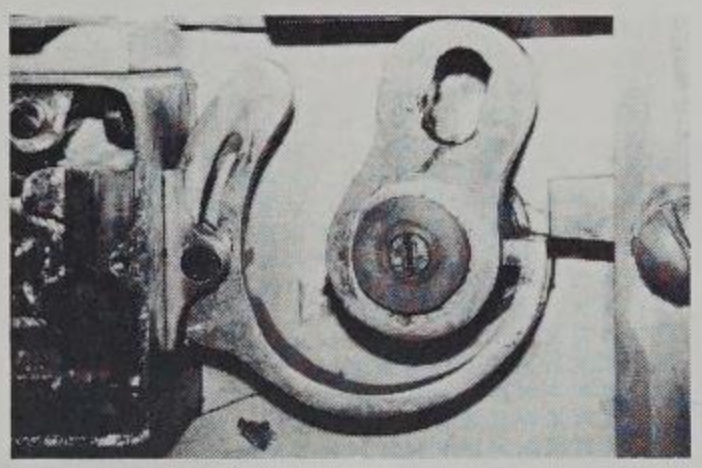
10. The driver and lever removed.



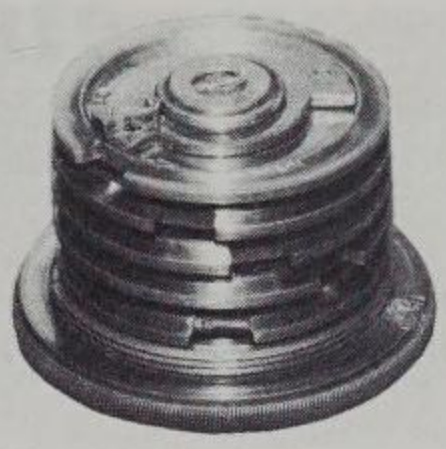
11. The lever is retracted.



12. The main bolt trail is romoved.



13. Combination lockbolt retracted.



14. The wheel pack of the Premier.

15. Famous bust of Joseph L. Hall.

In photograph 11, the lever has been retracted by the hook part of the driver, which in turn retracted the lockbolt. Now you know the Premier's secret.

Now let's look at the secret of the Hall's free-spinning handle. In photograph 12, the main bolt rail has been removed, giving us a view of the lockbolt and the handle mechanism. The round brass part in the middle of the handle shaft is not connected to the oblong piece that surrounds it. The hole in the top of the oblong piece is normally connected to the bolt rail that we have removed. When the safe is locked, the round brass part in the middle of the handle shaft spins freely inside the oblong piece. In this photograph, the lockbolt is in the extended position, and the handle will freely spin.

In photograph 13, the combination lockbolt has been retracted, its linkage has connected the round brass piece to the oblong piece. The round brass part and the oblong piece both have a slot in them. When the lockbolt is retracted, it moves the straight-tailpiece-like linkage into the slots in the two pieces, effectively connecting them together. Now the handle can be rotated to retract the boltwork. This is accomplished by a pin in the bolt rail that goes into the hole in the top of the oblong piece.

The wheel pack of this particular Premier consists of five 2-3/8" diameter wheels. (See photograph 14.) The wheels are interesting in that they are of the hole change variety but have movable flies.

In photograph 15, we have the famous bust of Joseph L. Hall, the man who invented the Premier lock. All Premier locks that I have seen have Mr. Hall's bust on the curb. I wonder what he would think if he were here today. What would he think of plastics, pot metal and tensil strength? My guess is that Mr. Hall would say to the safe companies in general: "C'mon boys. Let me show you how to make a *real* safe, one that you can be proud enough of to put your own picture on."

Yep, that's what he would say. §

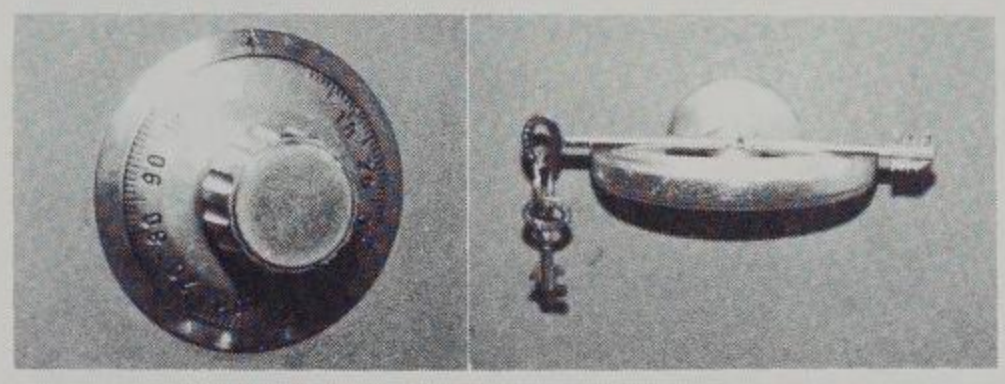
Opening A German Safe

"The owner cannot get the combination to work no matter how many times he tries it and no matter how he holds his mouth."

by Dave McOmie

This month we are going to depart from the usual format, in which we examine a safe that I worked on. Instead, we are going to look at a safe that was opened by someone else. The object of our attention this month is a German-made safe that was opened by my good friends Carlos Cintron and Dave Wells.

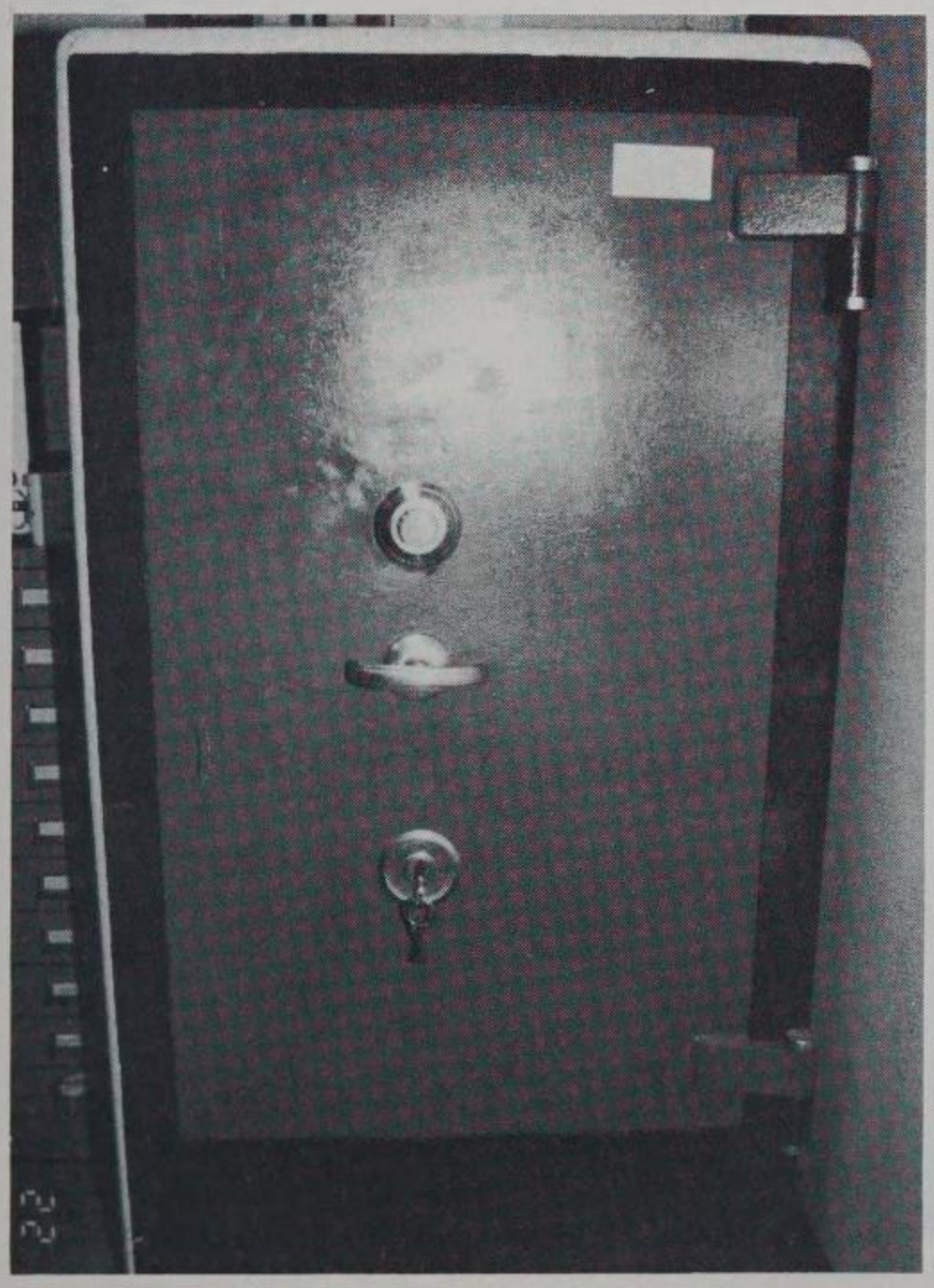
In the greater Washington D.C. area, Carlos and Dave are very well known as first-rate safecrackers. So it figures that they would get the call to open the malfunctioning monster from der Rheinland, shown in photograph one. The hinges look fairly light-weight, the dial and handle are both unusual.



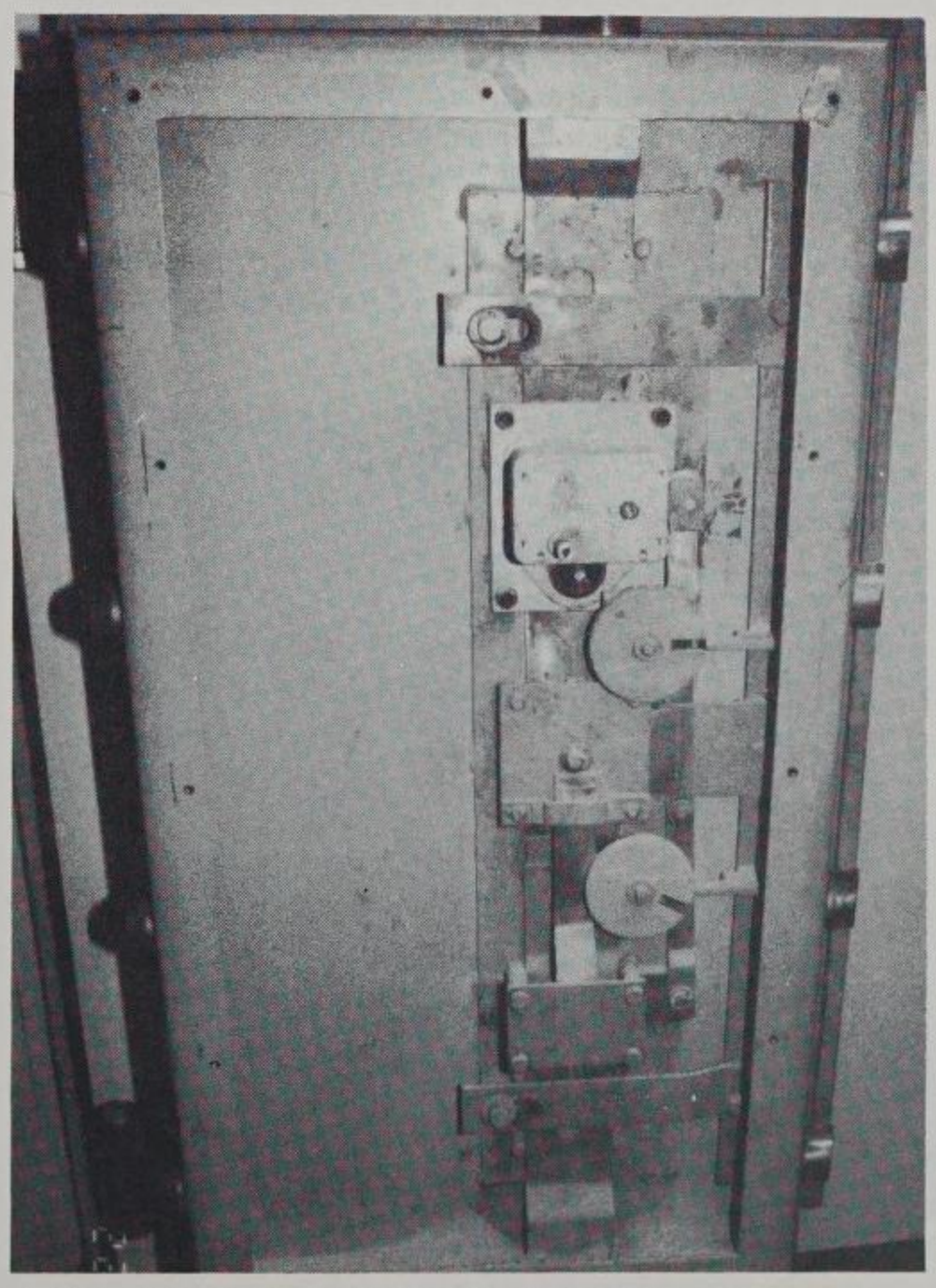
Photographs 2 and 3 show the unusual dial and handle.

(*See photographs 2 and 3.*) And the keylock escutcheon is a little out of the ordinary. Plus it won't open. The owner cannot get the combination to work no matter how many times he dials the combination and no matter how he holds his mouth. So Carlos and Dave don their red capes and drop in for a look-see.

They alternate turns at trying to dial it open, by varying



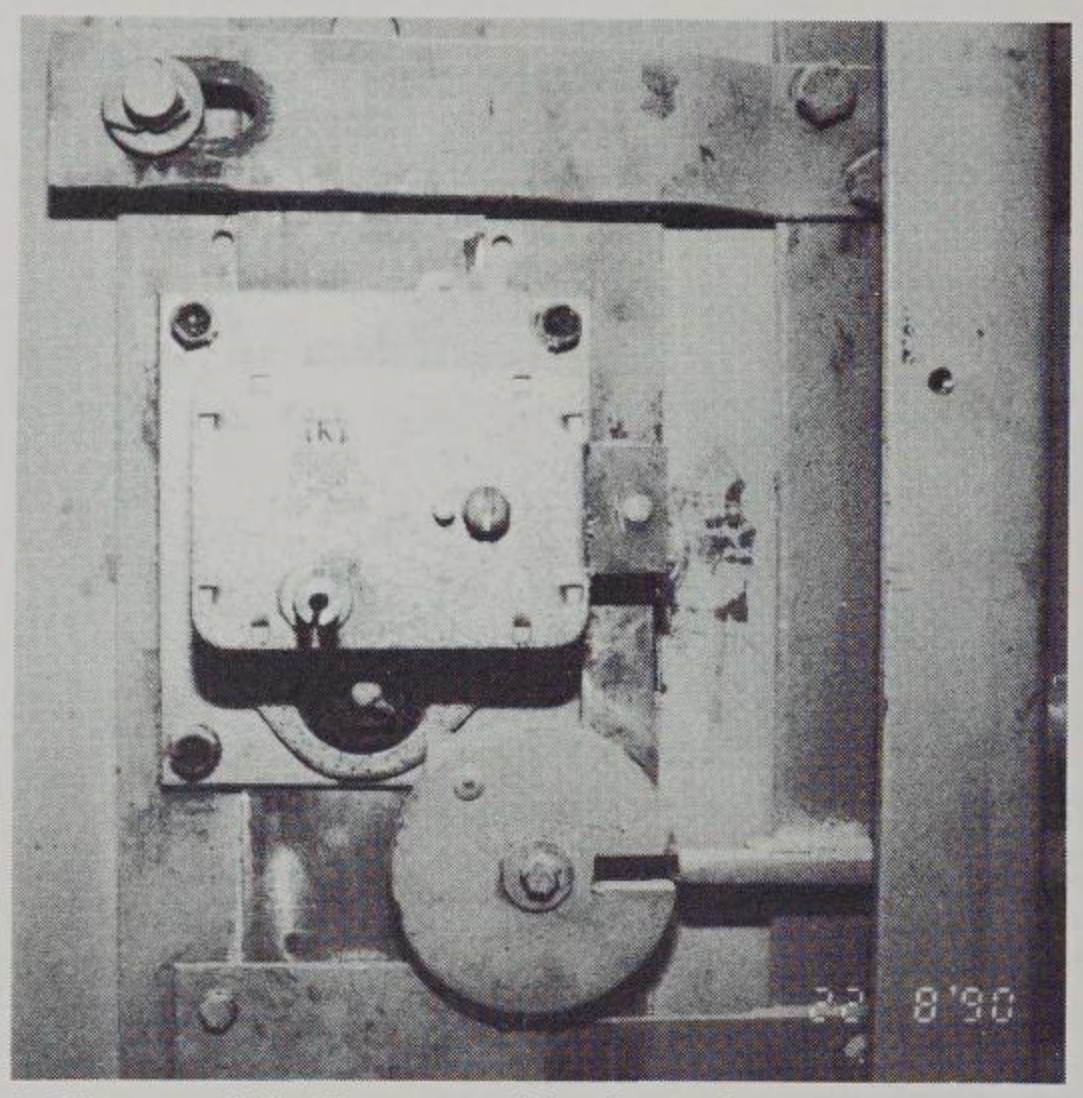
1. A German-made safe; the object of this month's opening.



4. View of the locks and boltwork with back cover removed.

the numbers, by beating the door, and by bluing the air. Evidently Dave varied more numbers, beat the door harder, and made the air bluer, because it came open on his watch.

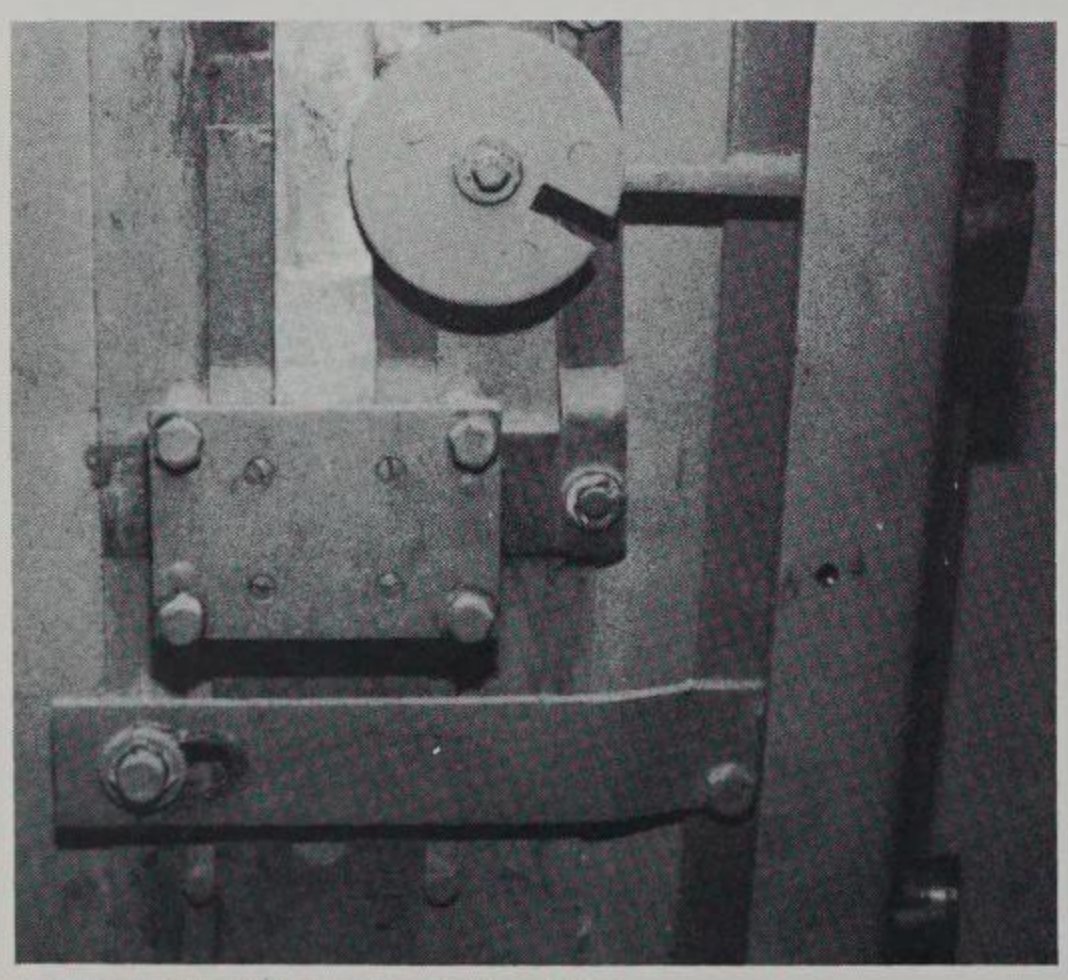
In photograph four, the back cover of the safe has been removed, giving us a view of the locks and boltwork. This is a 3-way boltwork, which means there are active bolts on



5. Close-up of the Kromer combination lock.

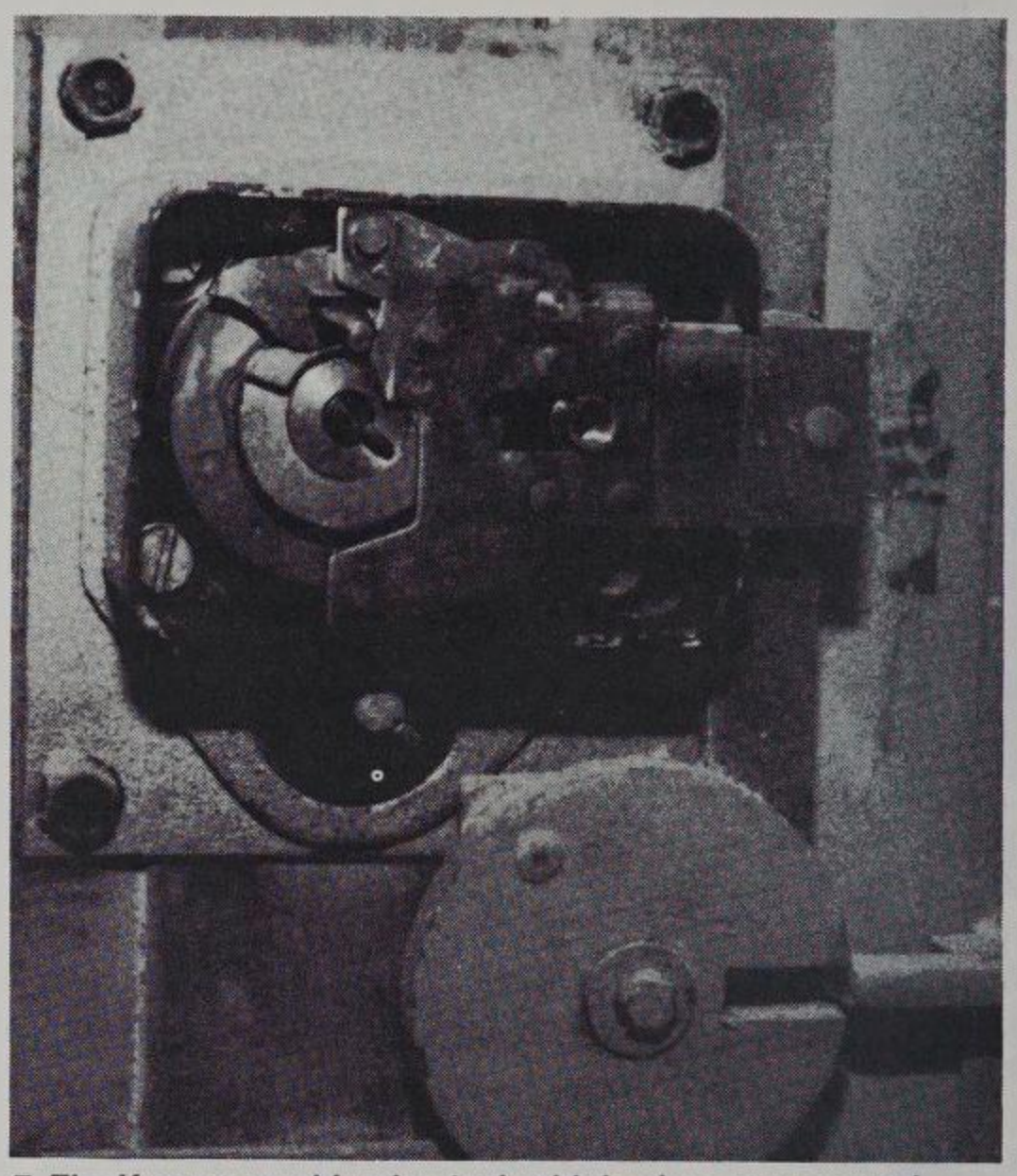
three of the four sides. There are four active bolts on the opening side, one active bolt on the top, and one active bolt on the bottom. On the hinge side there are four stationary bolts that do not retract with the other bolts. Also in this photograph we can see an unusual combination lock mounted right-hand (RH), two cams with slots in them, and a keylock down below.

Before we go any further, I should inform you that the total door thickness is a whopping 12 inches, and the locking



6. The keylock in the locked position.

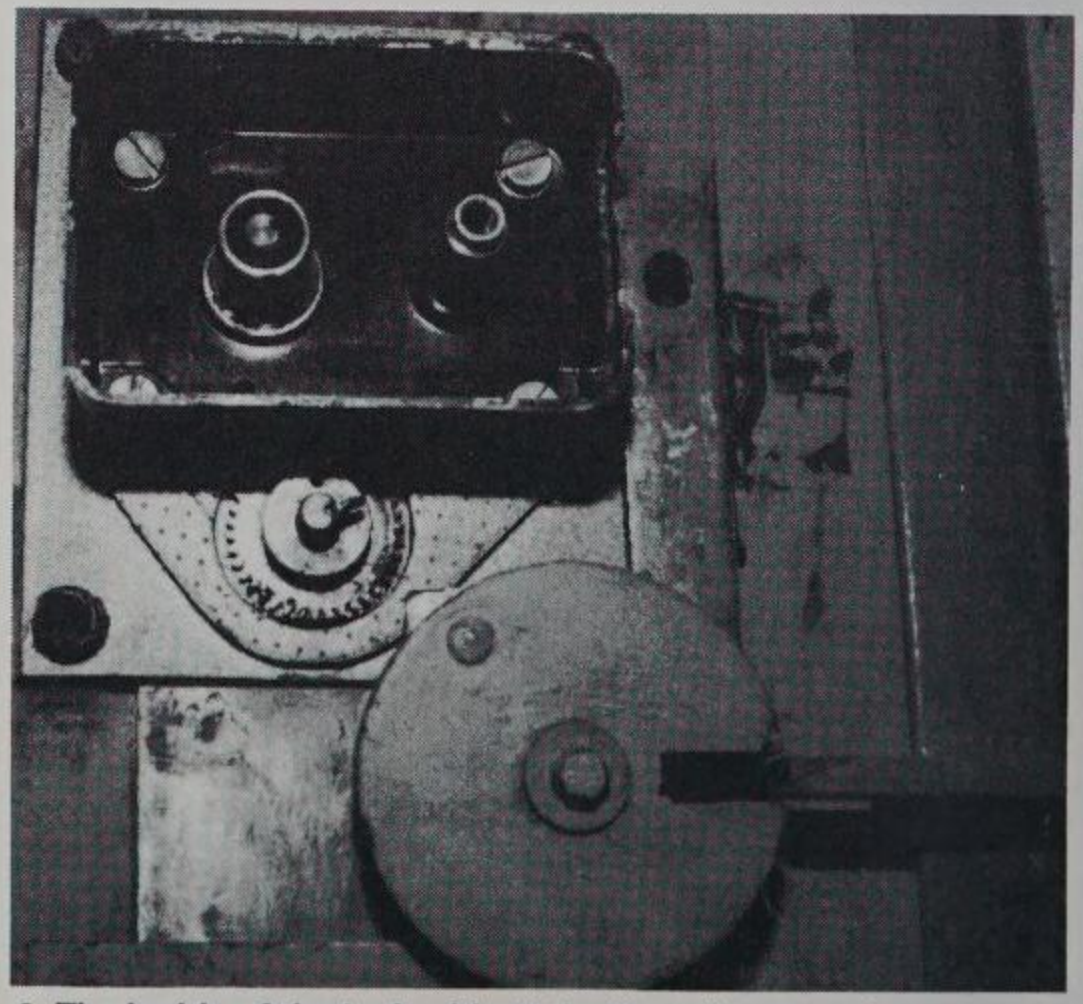
bolts measure a respectable two inches each in diameter! This is why it is somewhat surprising to see such light-weight hinges on the outside, until we realize that much of the door



7. The Kromer combination lock with back cover removed.

thickness is from insulation materials. By the way, the manufacturer's label on the back cover reads "Franz Garny, K.G., Frankfurt, Main."

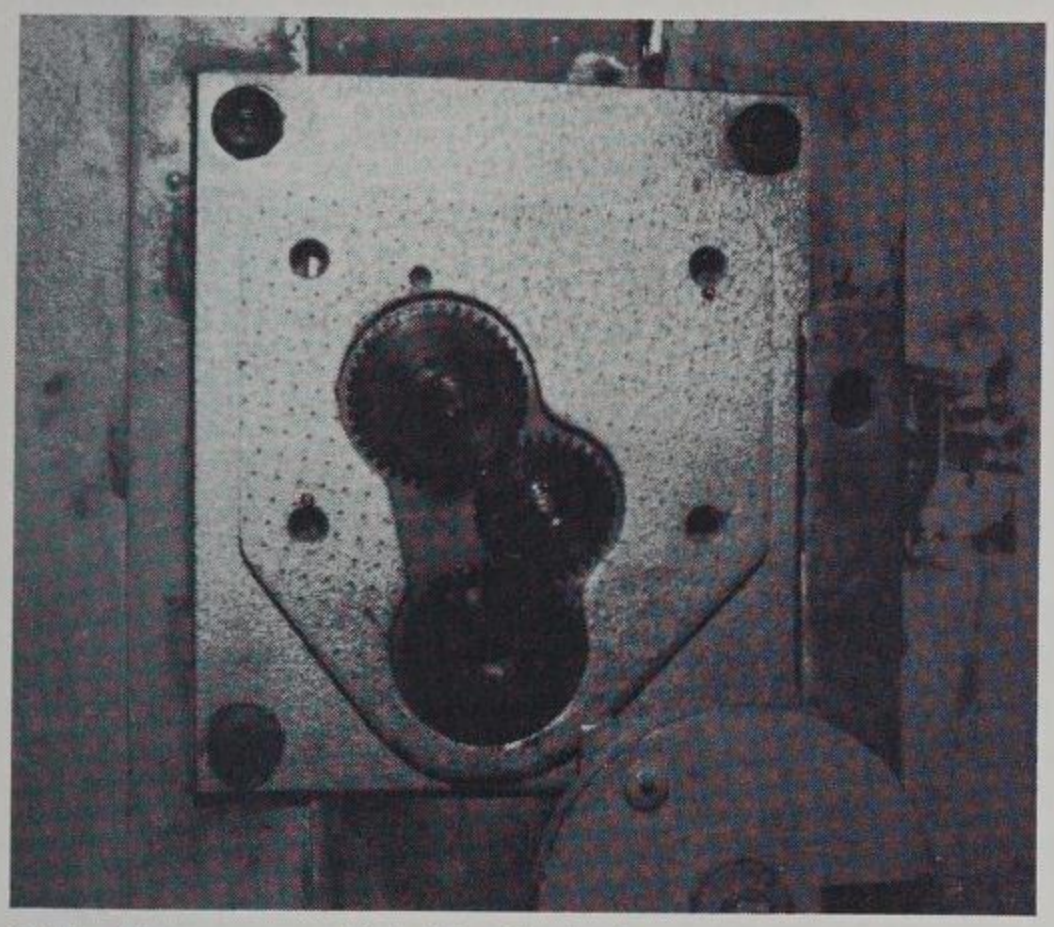
In photograph five, we have a close-up of the combination lock made by Kromer. Notice the long, round piece that sticks out of the lower part of the lock. This is where the change-key goes, and Carlos says the round piece sticks out of the lock about an inch. My guess is that it would be difficult to view the wheels through the hole, even with a good scope.



8. The inside of the lock with all the "guts" removed.

In this photo, the lock is in the open position. Attached to a hole in the lockbolt is a pin attached to a long vertical rod. When the combination lock is opened, two things happen: The cam pivots around so the slot is lined up. And the long vertical rod retracts, allowing the keylock to be opened.

In photograph six we have a view of the keylock in the locked position. How do we know it's locked? Look at the cam; the slot is not lined up with the bar. When the keylock is opened, the cam pivots and its slot lines up with the bar,



9. The three gears which drive the lock.

which allows the bolt-control handle to be rotated, retracting the locking bolts.

Photograph seven show us the Kromer combination lock with the back cover removed. There are four brass wheels, with a rear mounted driver. The lock is in the open position.

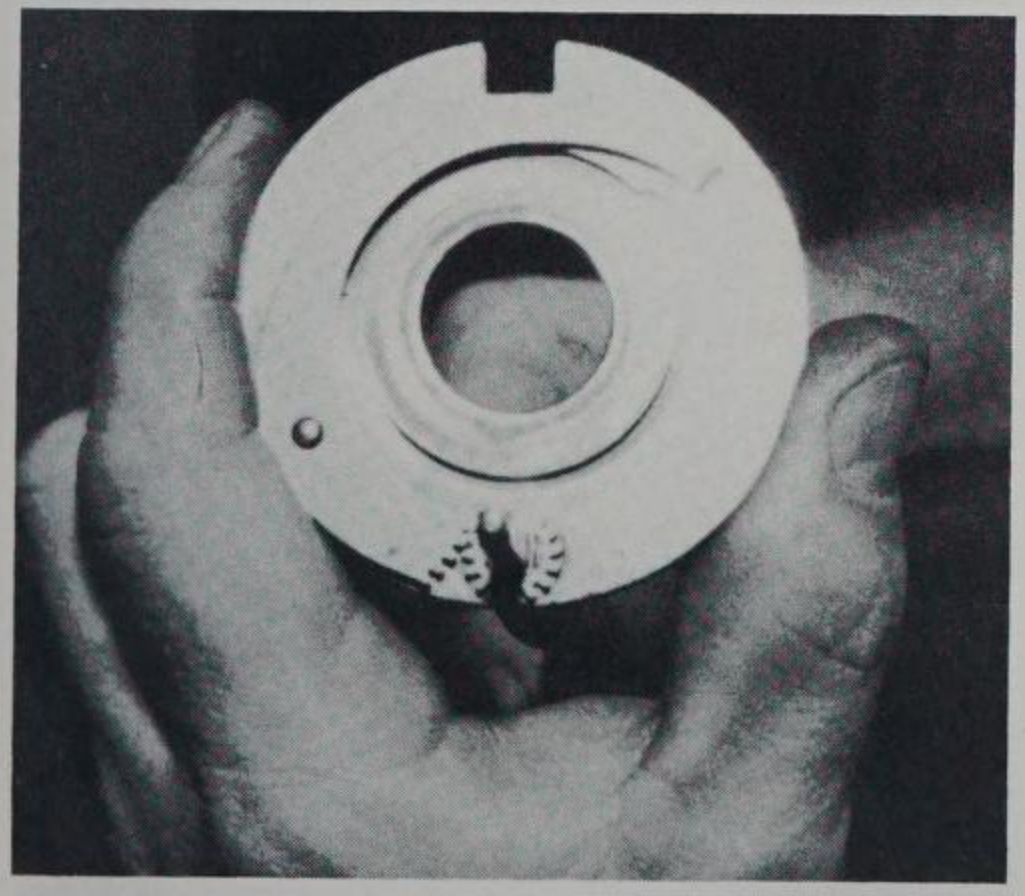
In photograph eight all the guts have been removed from the inside of the lock. This photo was taken from below the lock to give us a view of something pretty important under the lock. What is that we see? It looks like a gear, doesn't it? Is this lock gear driven?

Yep, it sure is, as we can see in photograph nine. With the lock removed from the door we can now see the gears. There are three gears. The gear on the bottom is attached to the dial spindle; and the gear on top is attached to the wheel pack. So the lock is mostly geared up, but as we can see in the photo, it also goes a little off to one side.

Let's make one more potentially pertinent observation. Look real hard at this photo. We can see four mounting screw holes for the lock. But it looks to me like there is another hole just above the top gear. Do you think this safe was drilled before? Your guess is as good as mine. (I guess yes, and the German fellow who did it was right on the money!)

In photograph 10, Dave Wells is holding one of the wheels out of the Kromer lock. Large wheels, them Kromers. And sticking through the change-key hub is the change key. Pretty stout looking wheels. A pretty stout looking safe.

Well, that about wraps up this month's tour of Germany. Our thanks to Carlos Cintron and Dave Wells for being such hospitable tour guides. Who knows where that dynamic duo will take us next time. See you next month. §



10. A large wheel from the Kromer lock.

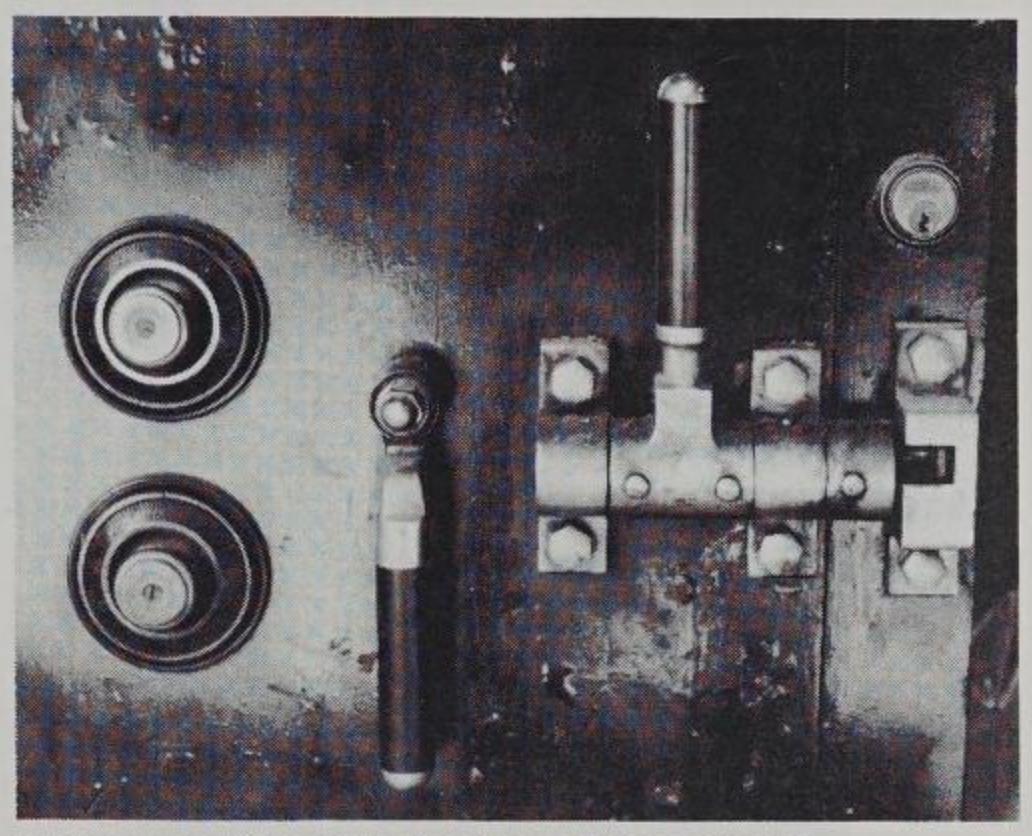
Antique Safe Opening

"By the way, if anyone can identify the manufacturer of this safe, please contact me by mail through *The National Locksmith*."

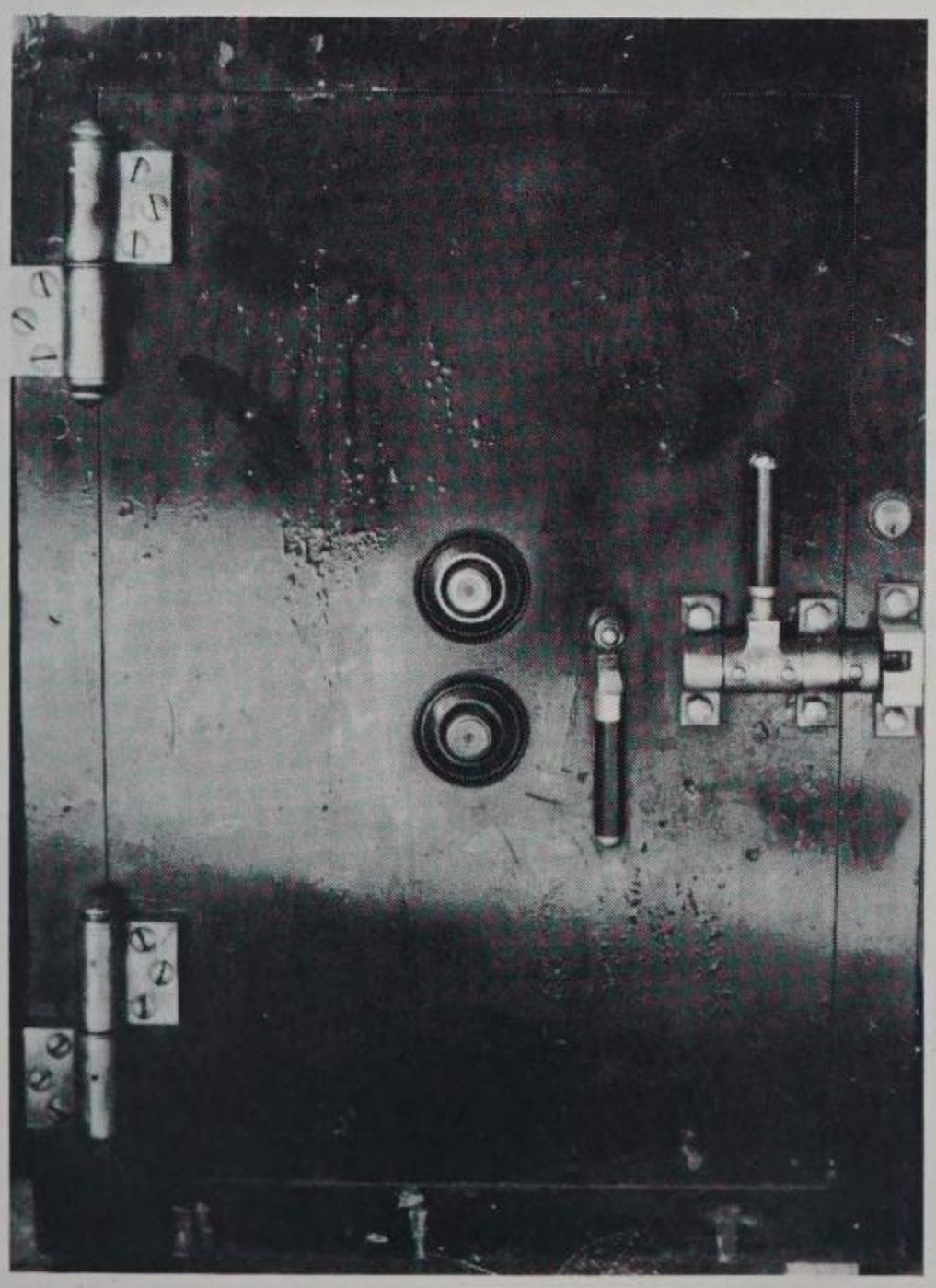
by Dave McOmie

Harvey Sass and I chatted through the mail about the safe shown in photograph one. It was locked and Harvey wanted confirmation of the lock on the inside. Based on the feel of the dials, and on the fact that they are large, steel dials with "YALE & TOWNE, STAMFORD, CONNECTICUT imprinted on them, we both suspected a pair of 027-1/2 locks on the inside. Notice that this is a left-hand door.

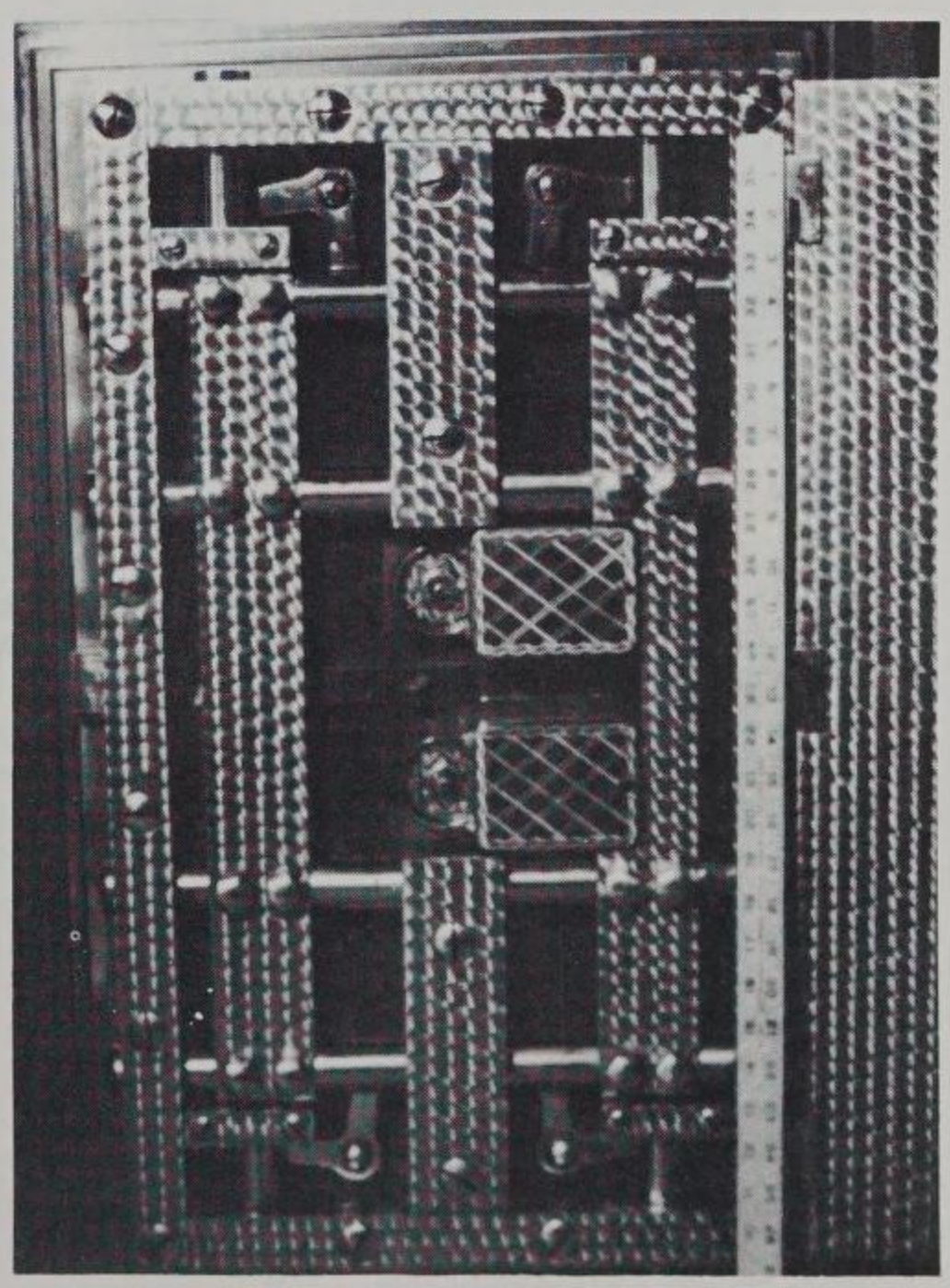
In photograph two, we have a close-up of the dials, handle, and pressure bar. The dials are removable; the handle looks like a cross between a Herring-Hall-Marvin and a Triumph; the pressure bar I cannot even venture a guess; and finally, notice the Yale pin-tumbler mortise cylinder mounted



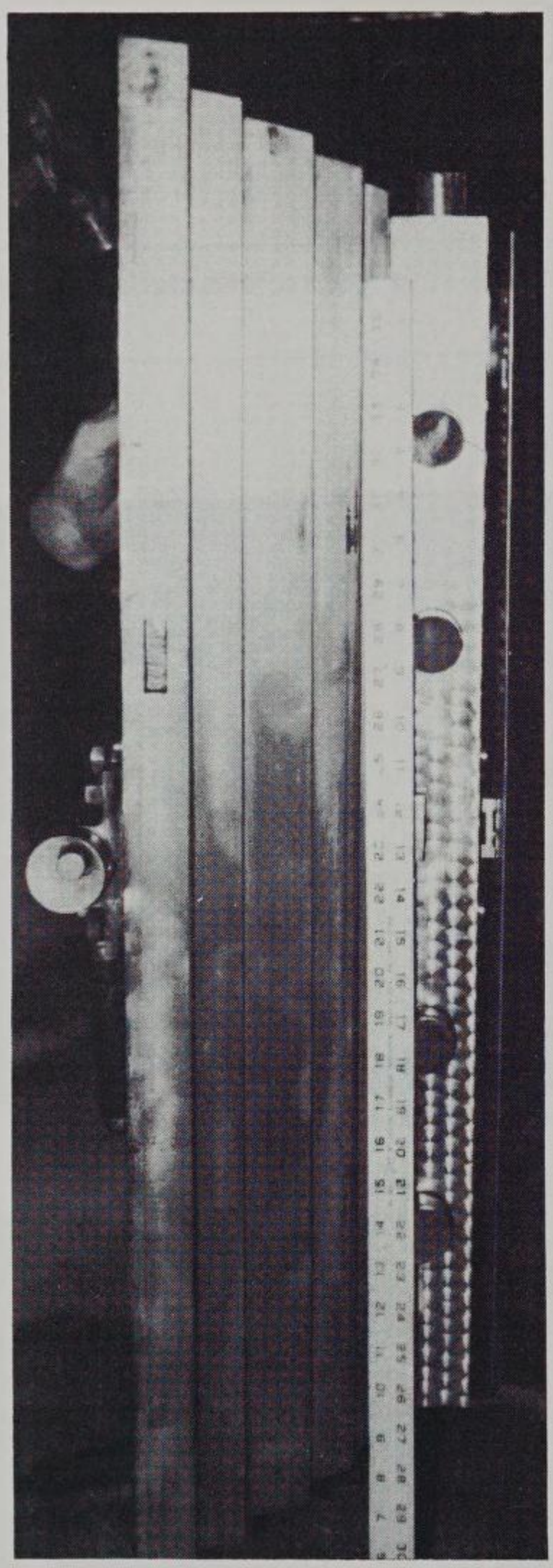
2. Close-up of the dials, handle, and pressure bar.



1. The subject of this month's safe discussion.



3. View of the locks and boltwork, with the door open.

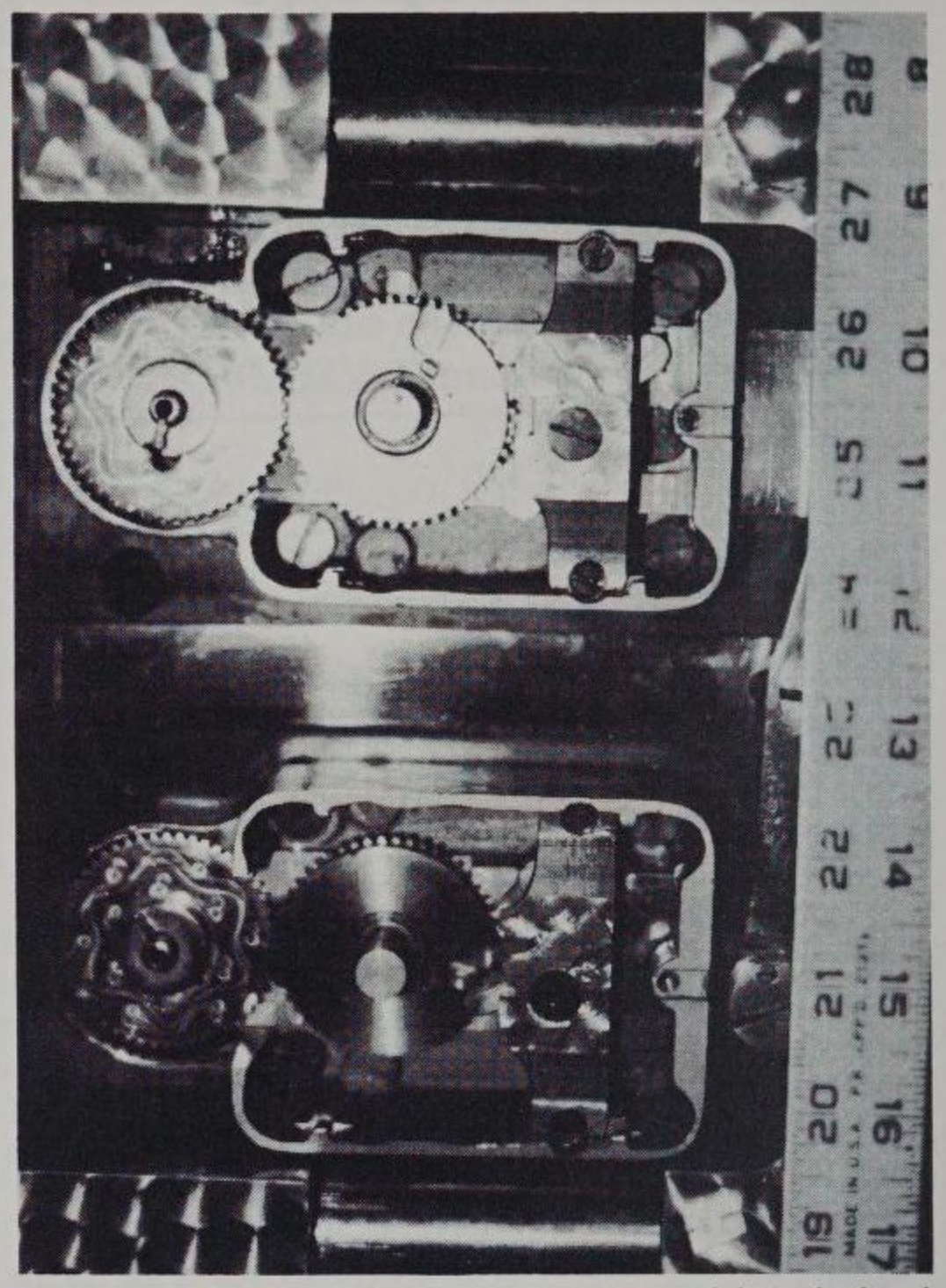


4. A side view showing the massive 6 inch, 5-ply door.

on the body. By the way, if anyone out there can identify the manufacturer of this safe, please contact me by mail through this magazine.

Harvey and his boys went to town on the safe. They drilled a couple of holes and finally hit the bulls-eye, as we shall soon see. With the door open and the hinged back panel swung open, we have a full-length view of the locks and boltwork in photograph three. This is a 4-way boltwork, with active locking bolts on all four sides. Notice all the scrolling. Gawrsh, it makes me long for the good old days. In the center of the photographs are indeed a pair of indirect-drive (transmission, offset-drive, what term does everyone prefer?) Yale 027-1/2 locks.

From the side view in photograph four (*this photograph is found on page 68*), we can see that this is a massive door nearly six inches thick. From the stair steps, we can reasonably assume 5-ply construction.



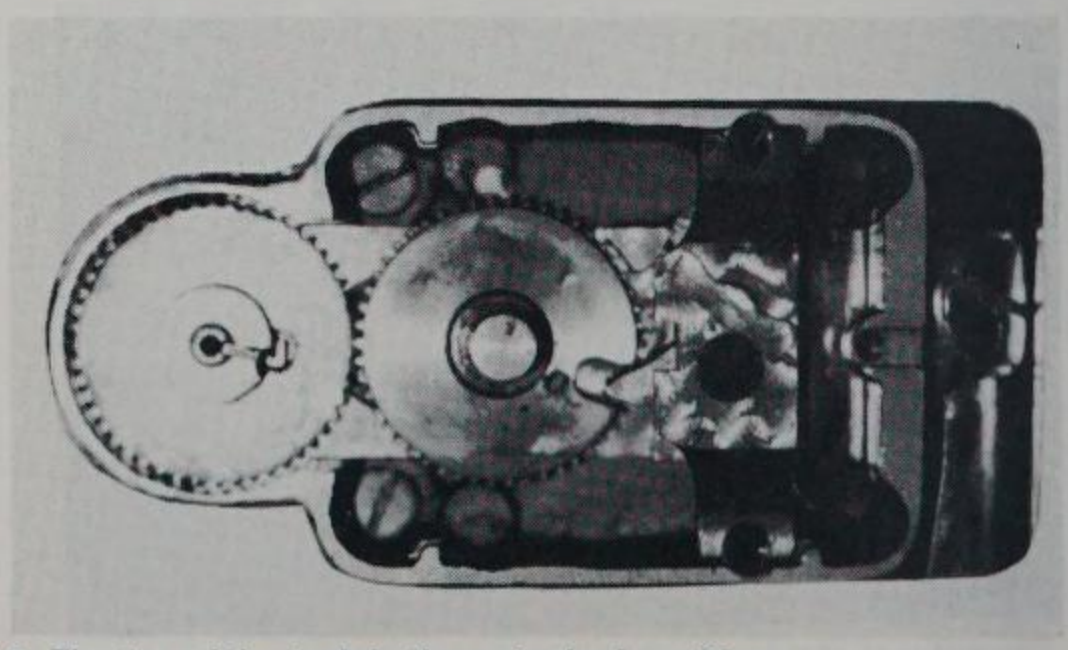
5. The locks found in this safe door. The top lock is locked and the bottom lock is unlocked.

In photograph five, we have a close-up of the locks. In this photograph, the top lock is locked, and the bottom lock is unlocked. The dial spindles come through the center of the gears at the left of each lock. Actual wheel center is two inches over from that point, as shown by the drivers in the locks.

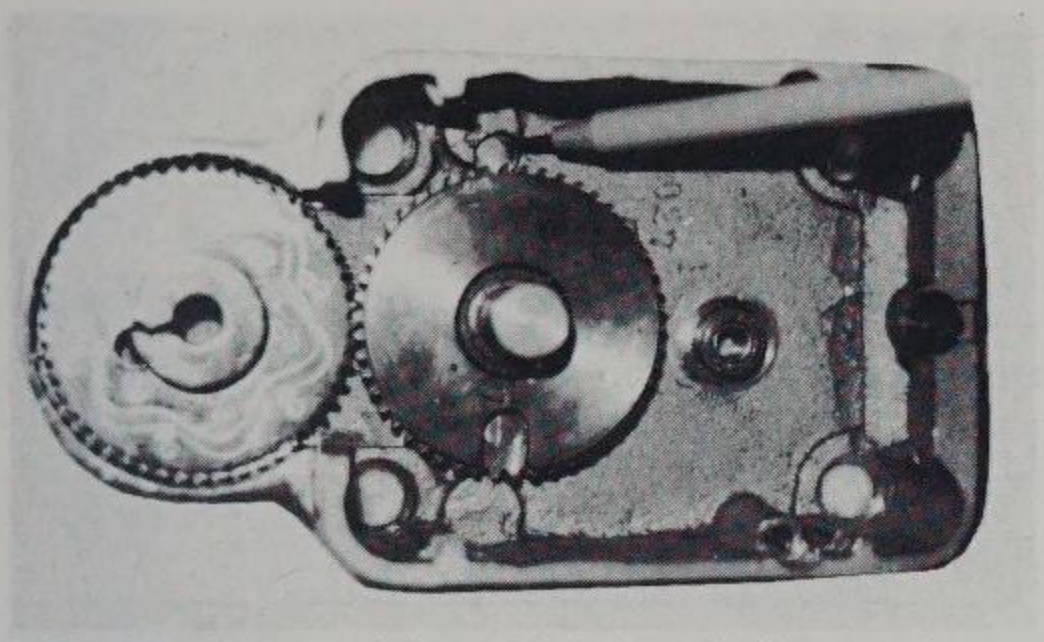
In photograph six, we have a close-up of the top lock in the unlocked position. There are four 1-7/8" diameter wheels in this lock, and the last turn of the dial is right to open.

In photograph seven, Harvey has removed most of the parts in the lock, to give us a pencil-pointing view of the hole that opened the safe. Perfectly placed, right at the edge of the wheels, the boys just had to transfer the gates around to the fence to open the safe.

One point of confusion among antique safe buffs is over the 025-1/2 and 027-1/2. They appear to be the same lock,



6. The top of the lock in the unlocked position.



7. The hole that opened the safe is indicated with a pencil.

but if they are, why did Yale see fit to use two different names for the same lock? In photograph eight we have

8. The lockcase beneath where the driver was.

evidence that would argue that they are the same lock. Harvey has removed everything from the lock, and this photo is of the lockcase beneath where the driver was. If we look hard enough, we can see engraved into the lockcase: 027-1/2, with a 5-1/2 below it. In my collection I have a similar lock that has both full numbers engraved on the lockcase, 025-1/2 and 027-1/2. So the question still remains unanswered, were they the same dadgummed lock, and if so, why two names?

In photograph nine all the parts are laid out for our examination: The back cover (which, by the way, does have both numbers engraved in it, 025-1/2 and 027-1/2), the screws, the fence screw, the roller fence, the lockbolt, the wheel pack, and the lockcase.

9. All the components of the lock are laid out here.

Our thanks to Harvey Sass and the hard-working boys at Elmer & Sons for taking us on this journey back in time. An interesting antique safe, an interesting antique lock, and an interesting antique opening. See ya' next month. §

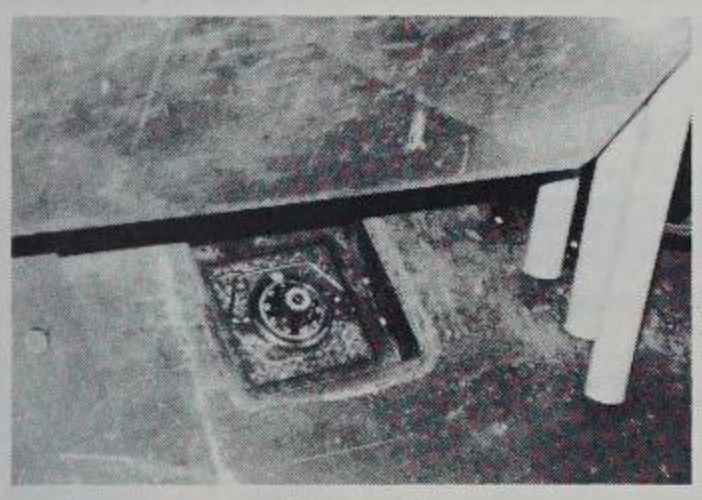
If you ever get to Chicago, it will be worth your while to drive a few miles out of town to see Harvey's collection of safes and safe locks. It was well worth mine.

Armor Safe

"After trying to manipulate for a few minutes, with my right hand while my left hand fed me lunch, I decided to drillime to go to work."

by Dave McOmie

Sometimes you have to improvise. When an awkward situation confronts you, where you cannot do things the way you would like to, you have to adapt. When I was called out to open the Armor square door shown in photograph one, I had to improvise and adapt, because normal techniques were not viable.



1. Armor square door safe.

I am not sure if you can see it clearly in this photograph, but there is a large heating duct just above the safe door. For a reference point to see what I was up against, look at the three poles at the right of the photo. The bottom of the heating duct is just about even with the lower edge of the safe door. With the duct about ten inches above the door, and covering most of the door, I could not fit a dial puller or a drill in there to do my job. So I adapted and improvised.

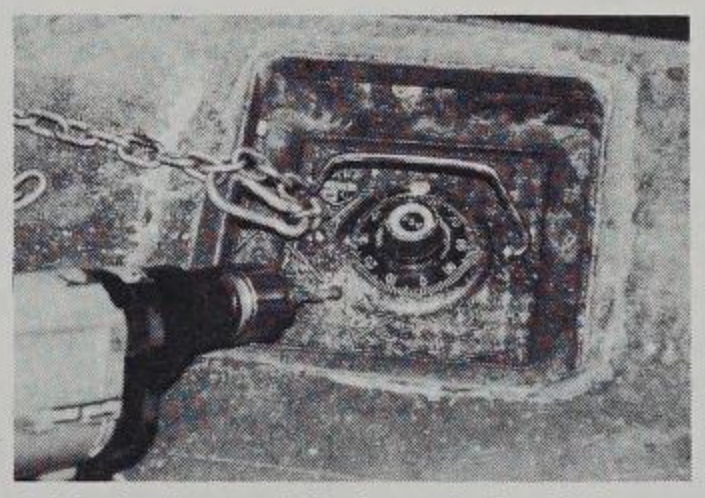
The situation was a long-lost combination, so I felt comfortable that the lock was in good working order. After trying everyone's favorite hobby (manipulation, of course) for a few minutes with my right hand while my left hand fed me my lunch, I decided to drill. I had finished my Twinkies; it was time to get to work.

Since Armor usually uses an S&G 6720, which is basically a 6730 without an internal relocker, I decided to angle into the lower edge of the lockcase. Hopefully, this would allow me to see the wheels with a scope, and then transfer the numbers to the drop-in point. So I measured, marked and center-punched the drill point just outside the dial ring at 65. Next, I fired up the Hornet and began the hole through the mild steel at an angle (*see photograph 2.*)

The hole went fairly easy for about an inch. And then I hit the hardplate. Now, drilling hardplate at an angle is not very much fun, but if you are careful to hold the motor at a consistent angle, and not let the drill bit bind against the walls of the hole, it can be done. In this case, one Strong Arm 1/4" x 4 saw me through the hardplate and into the lockcase. I only smashed my fingers and banged my head on the duct a few times in the process.

Now the hard part began. I stuck my scope in the hole, and took what I thought were accurate readings on the wheel gates, and began transferring numbers. I thought it was going to be a piece of cake; after all, I hadn't even removed the dial. And having the dial to use when transferring numbers is indeed something of a luxury.

So I transferred and transferred and transferred, but the darn fence would not drop in. I was getting just a little bit perturbed. And it especially bugs me to think that I am



2. Beginning to drill through the dial.

probably the only guy in the country that ever has occasional trouble transferring numbers. What is the secret of the guys who brag at conventions that they penetrate Relsom with one bit in five minutes and transfer numbers in even less time, without ever having a problem? Gosh, I would sure like to know.

Well, after getting nowhere for some time (I ain't telling how long, but the cows came home before I did), I checked and double-checked my readings. It is a little difficult to be accurate when you are looking at the wheels at an angle instead of either parallel or perpendicular. It was especially troubling because the hole had come out right next to the wheels. This can make it difficult to gain perspective.

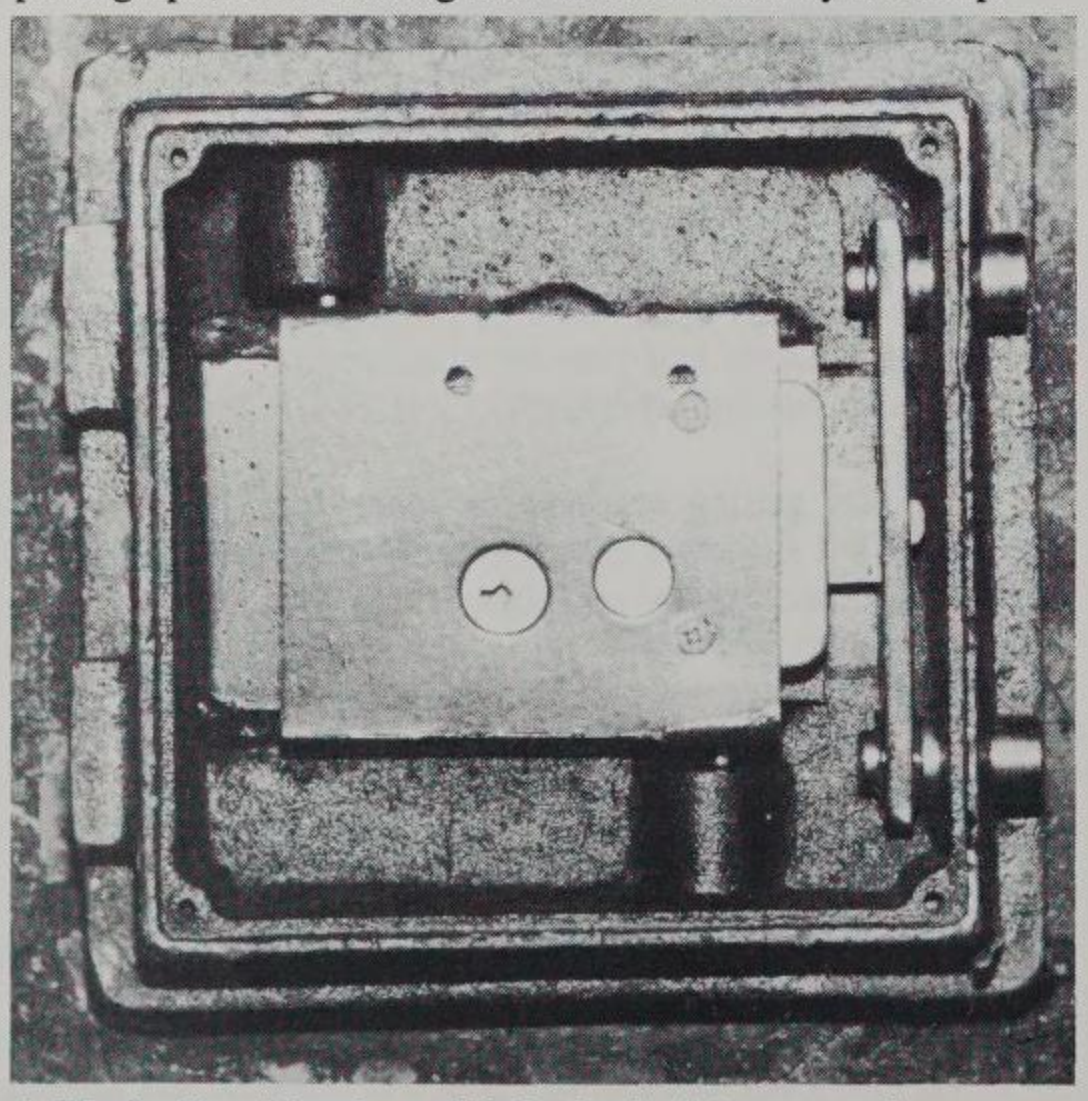
Just when I was about to tear that !@#$%&* heating duct out of the wall so I could drill straight in for the fence, it dropped in. Gawd was I embarrassed. I pride myself on being exceptionally quick with numbers and equations, but I had really blown it on this one. I needed to transfer the gates from 65 to 98 where the fence is, so I added to my numbers instead of subtracting! Good Lord, I have been transferring long enough to not make an elementary error like that, haven't I? I guess not. Maybe this is a good lesson. Don't be too darned sure of yourself.

After the chuckling little rascal (I swear, it was!) came

3. The outside of the Armor door.

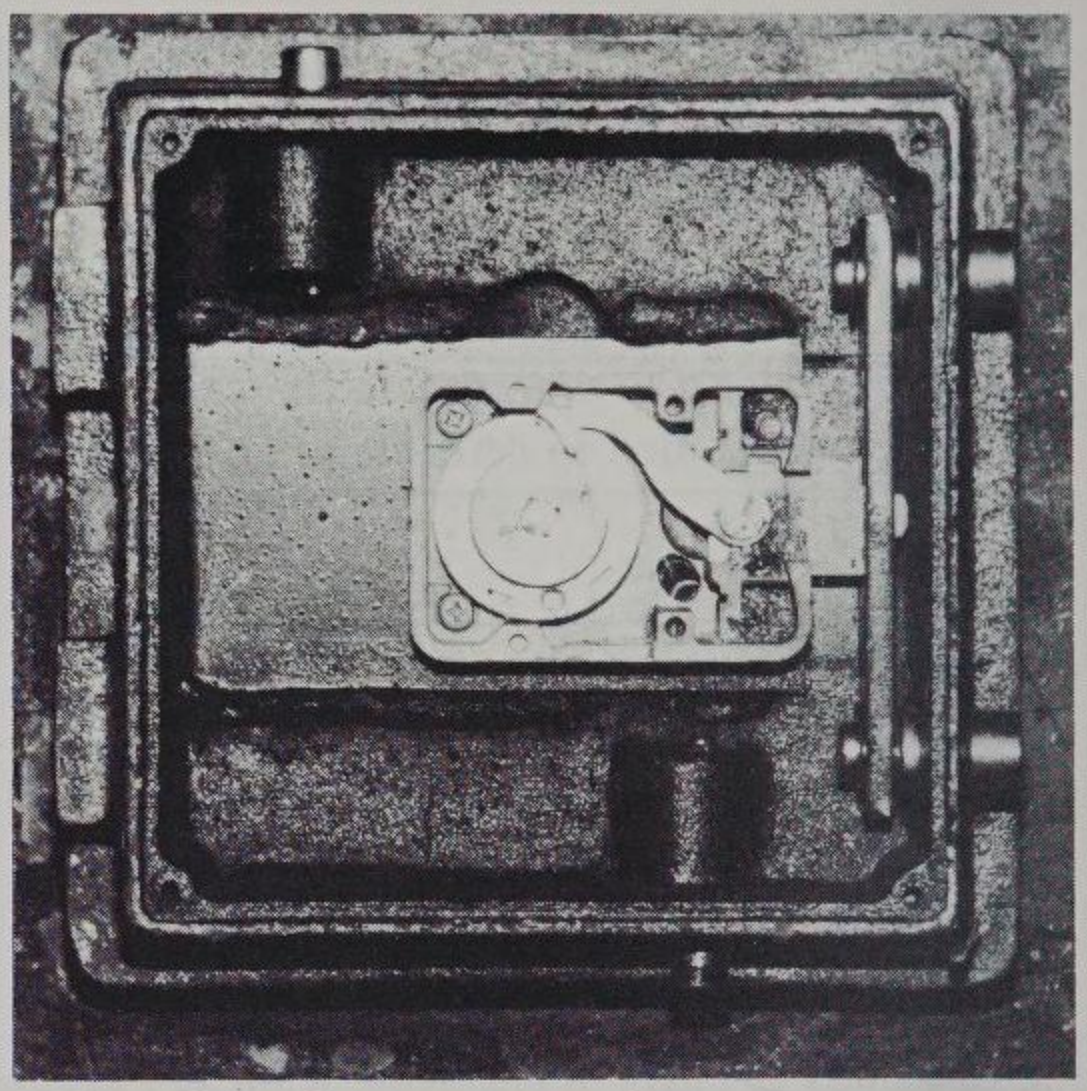
open, I snapped photograph three to show you a clear view of the outside of the door. Look hard and you can see the hole that was drilled outside the dial ring. There is no handle on this safe. The dial does double duty. In addition to dialing the combination, it also pulls back the locking bolts. This is a lift-out door.

In photograph four, the large back plate has been removed, giving us a view of the inside of the door with the relocking strap still attached to the back of the lock. Notice the locking bolts on the side, and the relocking bolts top and bottom. The locking bolts on the side are in the extended position in this photograph; the relocking bolts are held back by the strap.



4. The inside of the door with the back plate removed.

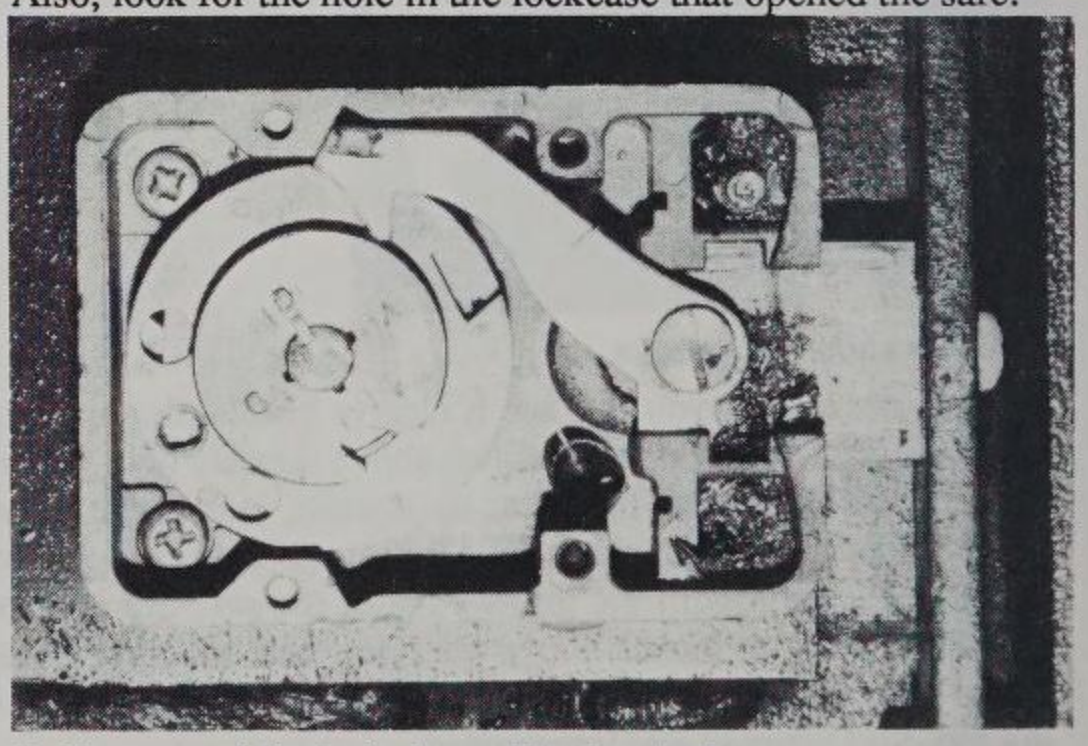
In photograph five, the relocking strap has been removed, and the relocking bolts have fired. I have never had to drill for these relockers, but they would not be fun. In this photograph, the locking bolts on the side of the door are in the extended position. The combination lockbolt is attached



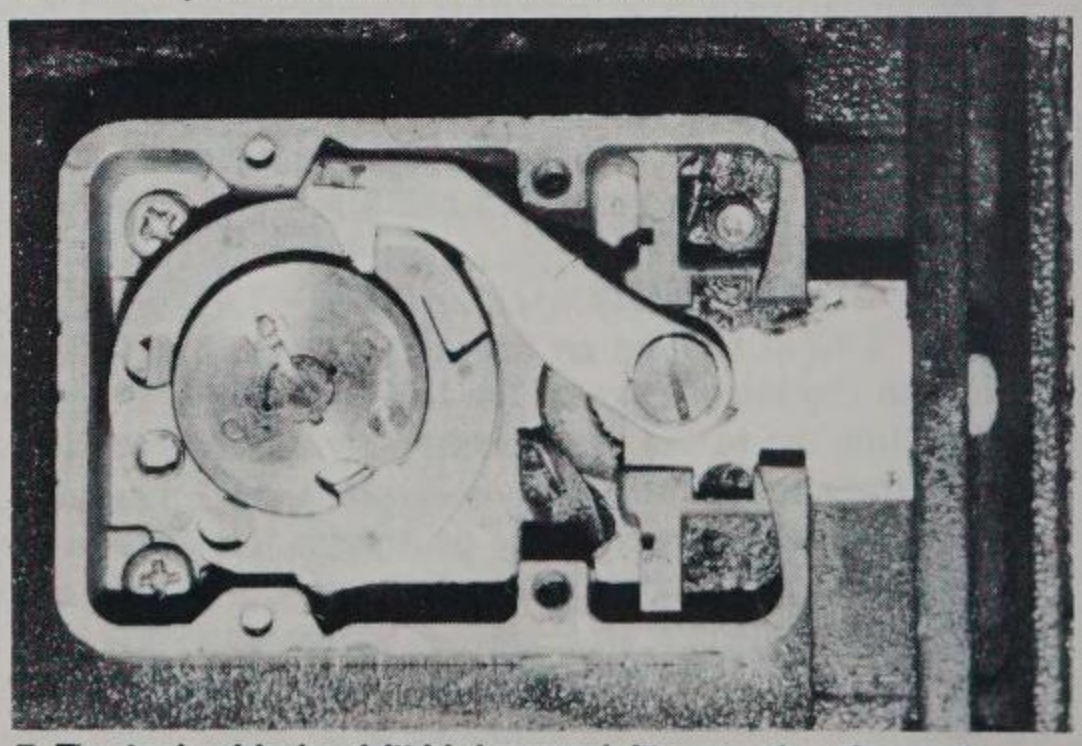
5. View with relocking strap removed.

to the bar that connects the two bolts, which gives the combination lockbolt control over the retraction and extension of the two locking bolts.

In photograph six, we have a close-up of the combination lock. It is in the locked position, which we can tell from the position of the fence and lockbolt. Look carefully and you will see the screw that attached the boltbar to the lockbolt. Also, look for the hole in the lockcase that opened the safe.



6. Close-up of the locked combination lock.



7. The lock with the drill bit inserted, illusstrating the angle.

In photograph seven we have another close-up of the combination lock. In this photograph, I have stuck a drill bit into the hole to show the steep angle at which it was drilled. Notice the absence of an internal relocker in this lock. It would not have mattered a whole lot whether there had been a relocker or not; the hole was too perfectly placed. Too bad my transferring wasn't as perfect! See ya next month. §

Gary Fire Safe

"We pulled the drill point from the manual, measured, double checked, center-punched and drilled. We were right on the money."

by Dave McOmie

One of the slickest tricks you can use to open a variety of fire resistive safes is the "cam-punch." This enables you to drill your hole straight in, without disturbing the dial or the handle, and to open the safe with a hammer or punch. Sometimes it is the perfect therapy for a bad day.

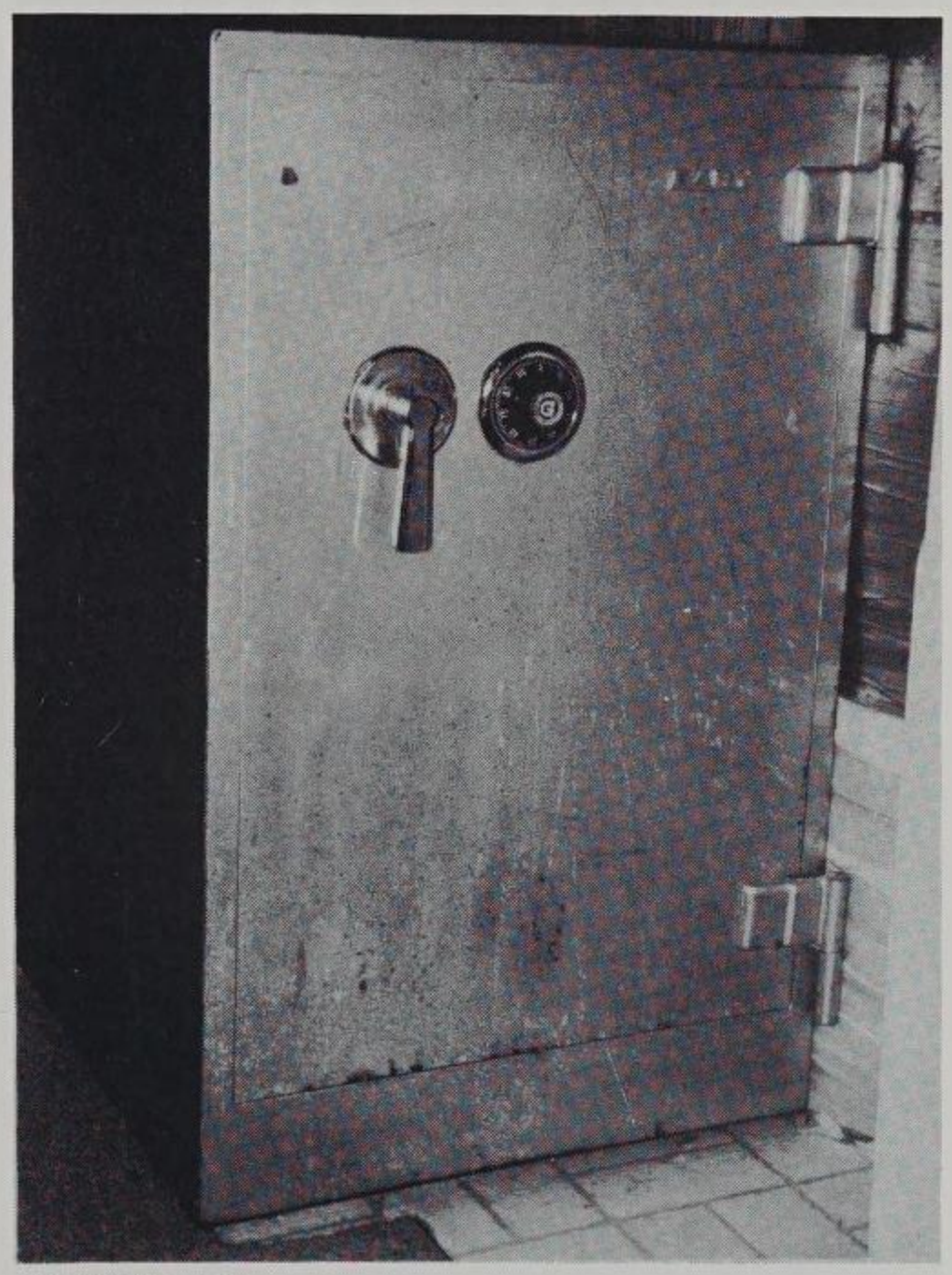
Last month I had a particularly bad day. Some low-life vandal tore the spoiler off the deck lid of my car; my ex-wife's lawyer threatened to mortgage my life; and an unheard of error in balancing my checkbook caused an untimely overdraft. Good grief, this particular day I was wondering why I bothered to get out of bed!

Then my beeper went off—BEEP BEEP BEEP!!! It was Mike from Mikes' Lock and Safe in Tigard, Oregon. Mike had a bunch of safes that were locked up and he wanted to hire my services. I almost told Mike to call Allied. (When I don't want to do a job, I usually give it to my old alma mater). I felt like kicking back with a bottle of my favorite Irish Cream and relaxing, but I didn't want to torque Mike off. After all, he only calls when the need is serious. So I stopped feeling sorry for myself (martyrs are so unappealing, aren't they) and headed for that unheralded metropolis, Tigard.

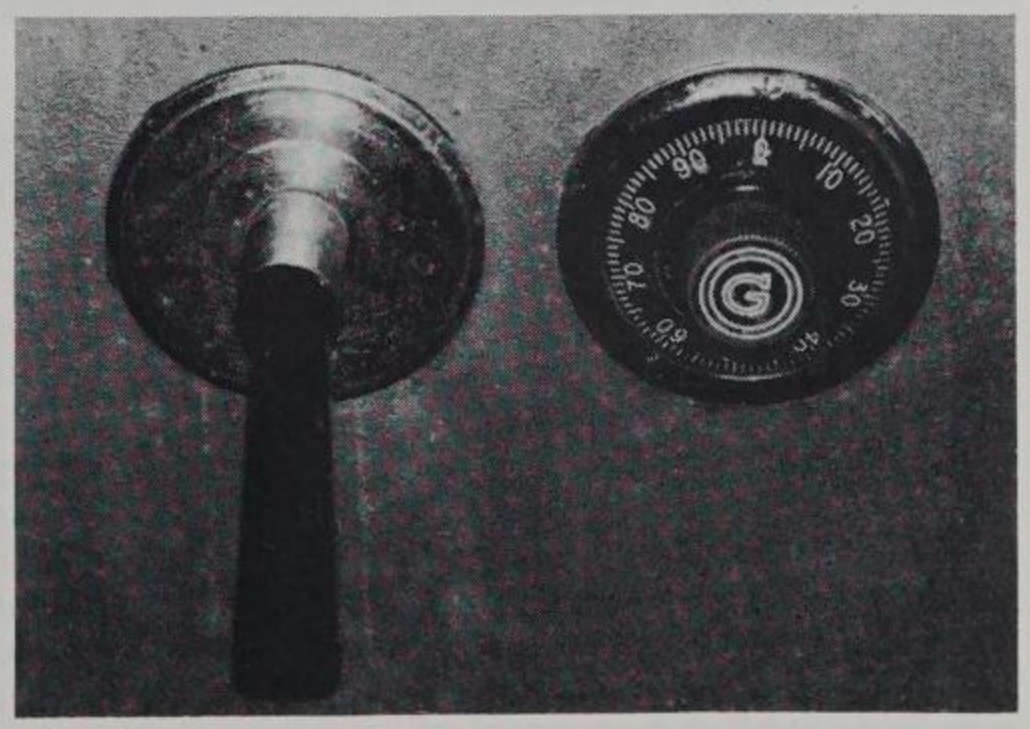
Mike had a bunch of safes lined up to be opened. The one that is the subject of our scrutiny of this month is the Gary fire safe shown in photograph one.

This is an old one, dating back about 30 years. (Gee, it is almost as much an antique as I am!). Photograph two shows the dial and handle. Notice the round escutcheon plate under the handle. Most of the Gary fire safes you see in the field will not have this plate under the handle, but a few of the old ones will. Also notice the front reading S&G dial with the old Gary lettering logo in the center.

I tried everyone's favorite hobby (manipulation) for a few minutes while I watched the end of the basketball game on TV. After the game was over (the Trail Blazers, finest team in the NBA, won of course) I got to work. My normal preference in a situation like this is to pull the dial and drill straight in. The dial can be epoxied back on the shaft and the repairs are invisible under the ring. But in this case, the circumstances were a little different. Mike's young sons were intently watching every move I made. And I wanted to get some excitement going, and involve them if possible. So I decided that we (me and the boys) would drill for and punch the handle cam. It makes for a much better show.



1. Gary fire safe.



2. The Gary Safe dial and handle.

From *The National Locksmith Guide to Safe Opening* (what a great book!) we pulled the drill point, measured, double-checked, marked, triple-checked, and center-punched.

The trusty Hornet was fired up in low speed, and a high speed bit penetrated the outer skin and insulation. A quarter-inch Strong Arm finished the job through the hardplate, and we looked in with a straight light. Jiggling the handle as we peered, we could see that the hole was right on the money.

As the handle was jiggled, we could see the handle cam moving back and forth on the inside. That is the clue you need to know that you are right where you want to be. I inserted a long drift punch into the hole, and Mike's oldest son, Andy, (a real chip off the old block) put pressure on the handle while I smacked the punch with the two-pound hammer. "It's moving, it's moving," he said as the handle began its counterclockwise rotation to unlock the safe. Two seconds later Andy pulled open the door of the defeated Gary. Great job Andy — it feels good doesn't it!

On the back panel were the labels shown in photograph three. The top label is a manufacturer's certification of fire resistance, as opposed to U.L. certification. The middle label the old obsolete T-20 tamper resistant label that meant something that still escapes me. And on the bottom is the U.L. label signifying the presence of an external relocking device.

With the back panel removed, as in photograph four, we can see the entire boltwork. Notice the configuration of the upper locking bolt on the hinge side — how it goes up and over the top of the lock. This is a real service advantage over the newer style (but obsolete) Gary fire safes that ran the locking bolt right over the back of the lock. They can be a pain in the neck, requiring more of a teardown than should be

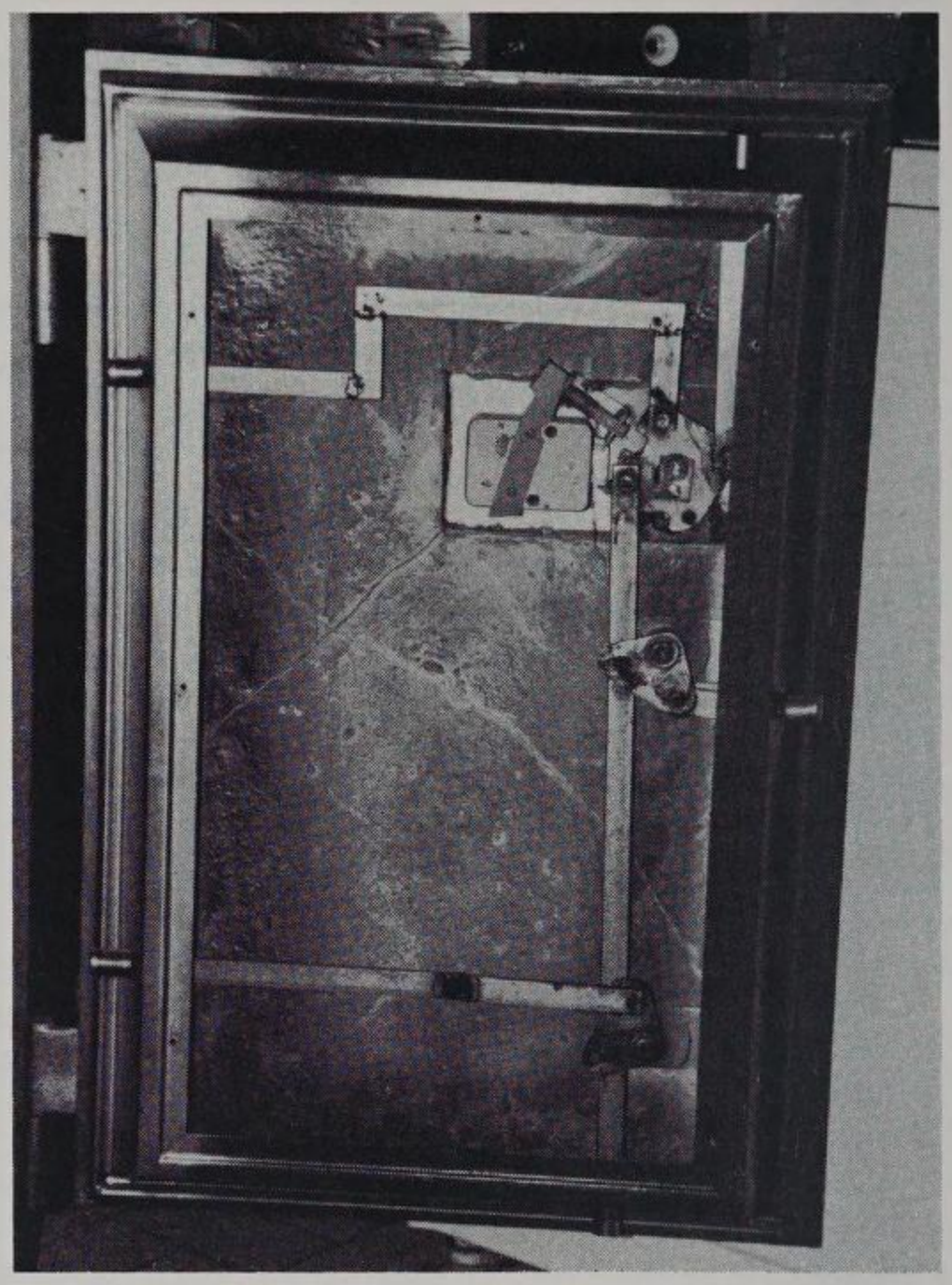
3. The labels found on the back panel of the safe.

necessary to service the lock. Notice there are five bolts on this door. Two on the hinge side, one on the opening side, a top bolt, and a bottom bolt.

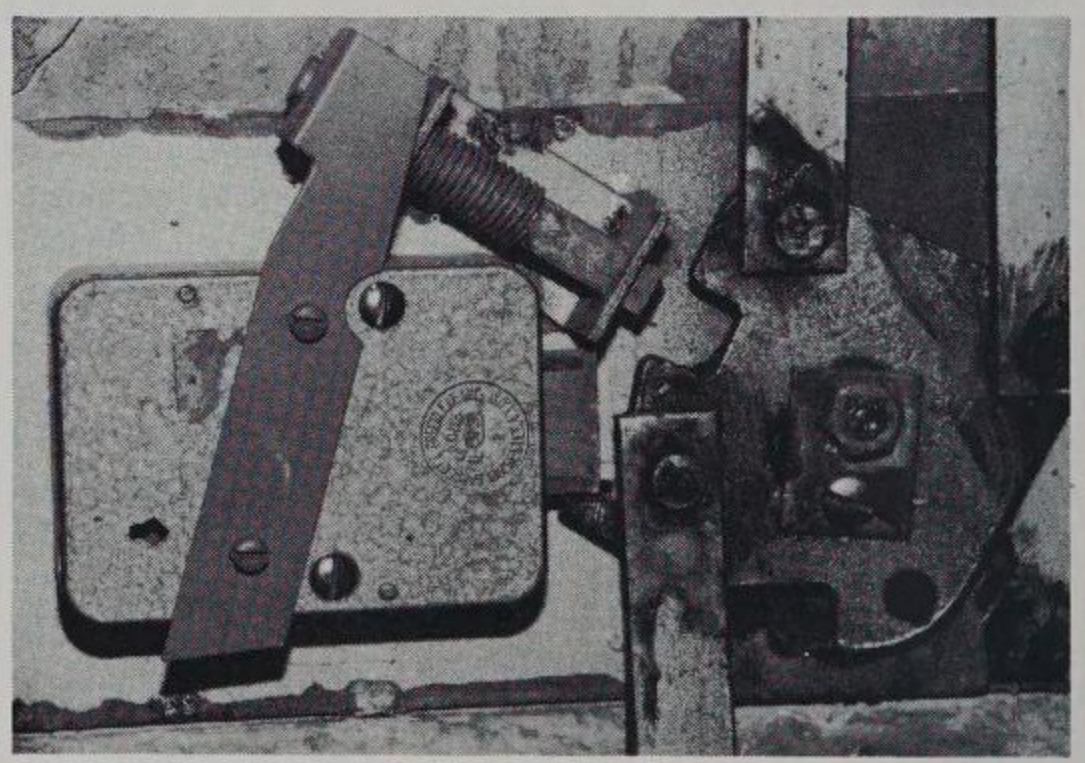
In photograph five we have a close-up of the lock, relocker and handle cam. In this photo the lock is in the locked position. Notice how the tip of the handle cam is blocked from moving upward by the lockbolt.

In photograph six I have simulated the opening by punching the handle cam in far enough to bypass the lockbolt. In this photo, the lock is in the locked position, but the handle cam has been punched in far enough to bypass the lockbolt and retract the locking bolts. If you look hard, you can see the hole that opened the safe — it is just below and a little to the right of the lockbolt. The relocker is still held in check by the strap on the back cover of the combination lock.

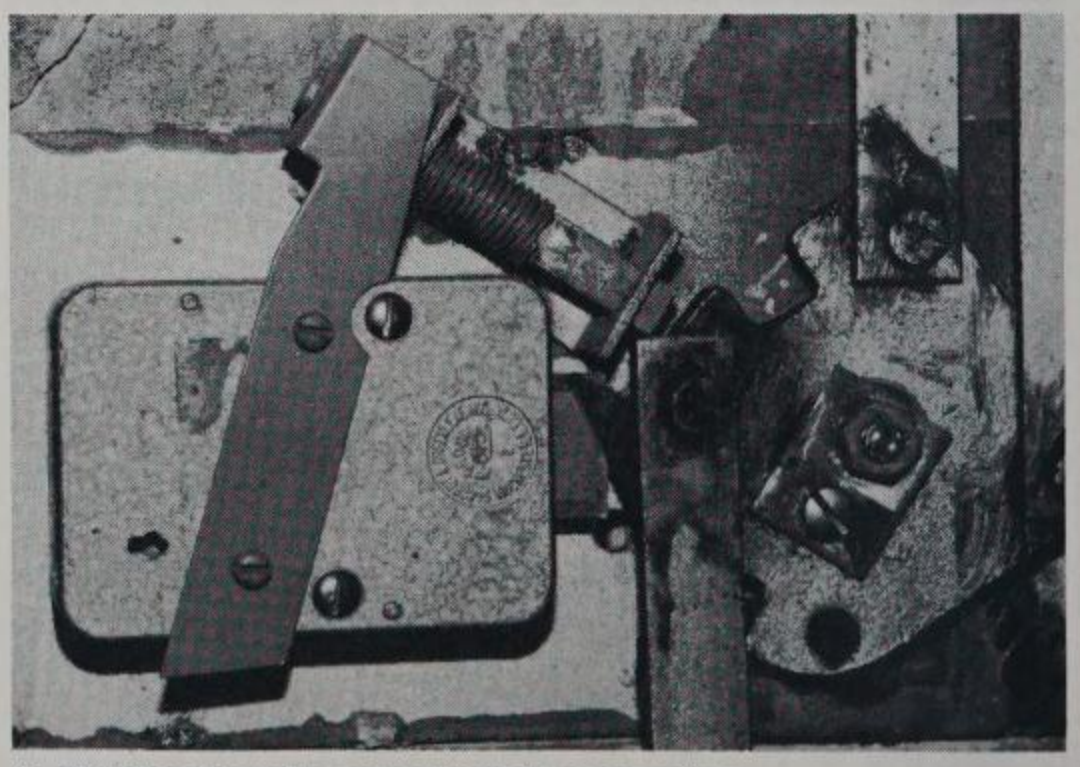
In photograph seven the back cover of the combination lock has been removed, setting off the external relocking device, which is now engaged in a cutout in the handle cam.



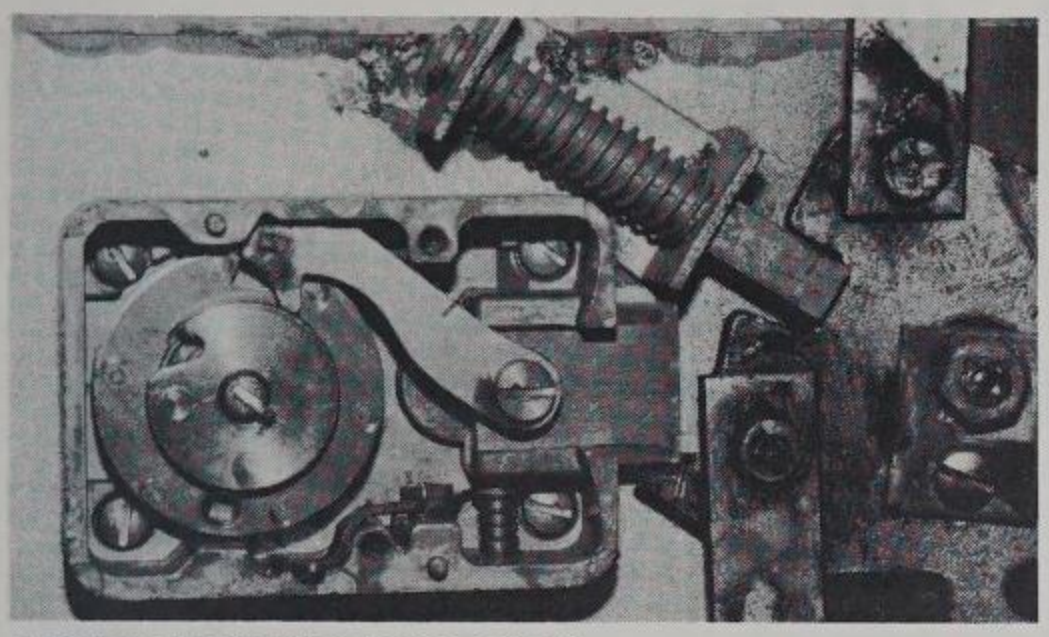
4. Boltwork visible with back panel removed.



5. Close-up of lock, relocker and handle cam.



6. Punched handle cam simulating opening.



7. External relocking device set off.

The lock is an old S&G R6730 with the old-style internal relocker. This relocker is made up of three essential parts: a relocking pin, a relocking spring, and a relocking trigger. When the back cover is punched or removed, the relocking trigger releases its hold on the spring-loaded pin, which now shoots up into a cutout in the lockbolt, effectively deadlocking it.

Incidentally, in my opinion, this is a proper use of the phrase "relocking trigger." It is my humble, and admittedly minority, opinion that the current use of "relocking trigger" has reduced language to mush. It is descriptively fallacious, grammatically embarrassing, and just plain historically incorrect. But this is a debate for another day; suffice it to say I am willing to listen to any and all dissenters.

Anyhoo, this cam-punching job was just what the doctor ordered. I felt a lot better. Spoilers, lawyers and checkbooks are a dime a dozen, but a good safe opening is worth its therapeutic weight in gold. And besides, Mike said he would do the repair! §

Hall's Fire Safe

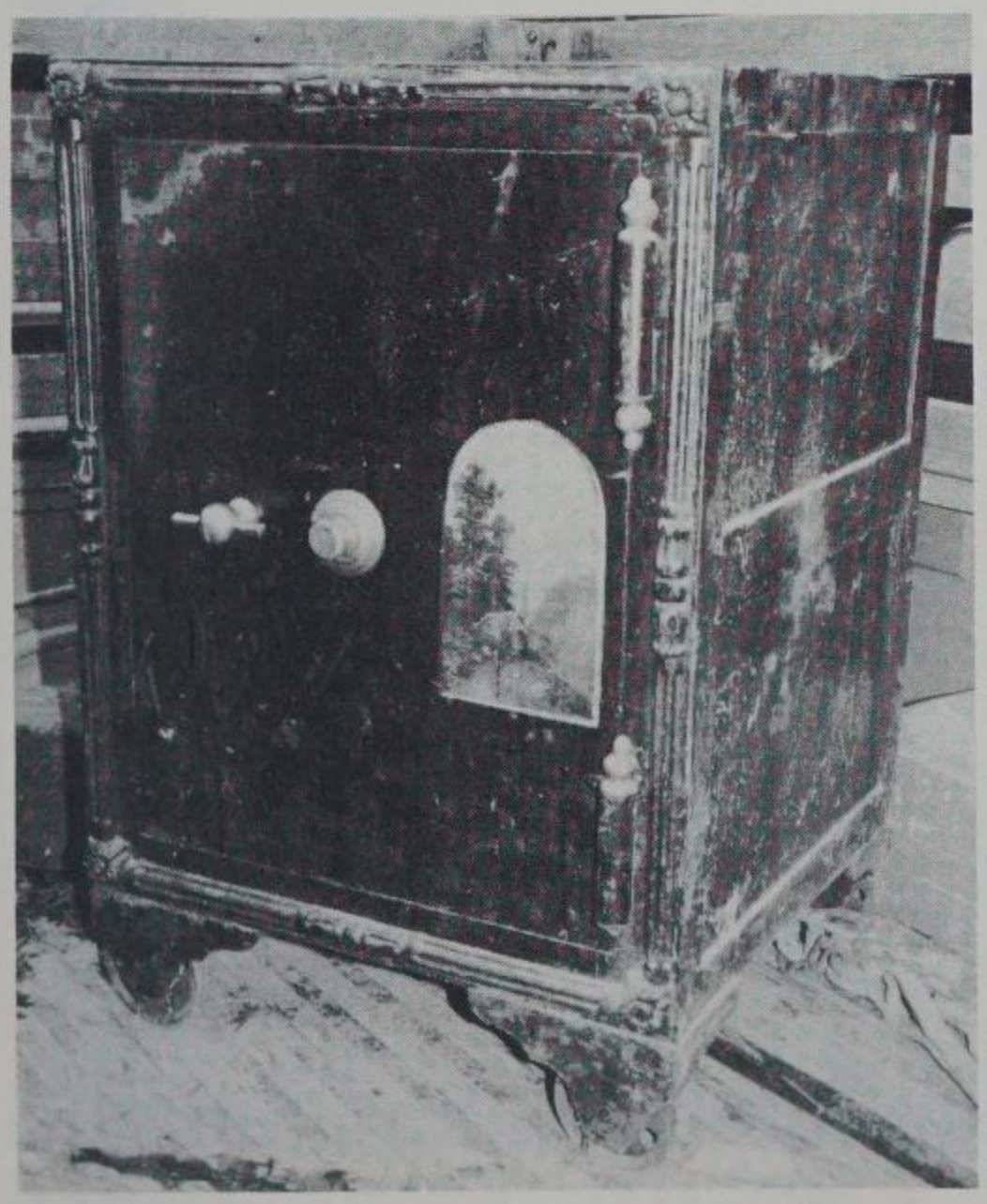
"The hole came out too close to the lockcase, and given the angle of the hole, I could not get my scope in. I made another hole."

by Dave McOmie

Something old, something new, something black, something well used. That pretty much describes the safe and opening that are the subjects of this month's scrutiny.

The safe shown in photograph one is a Hall's fire safe. Something old, black, and well used. What is new, at least for me, is the technique I used to open it, which we will discuss shortly.

Let's get in to a little bit of identification. Photograph two is of the dial and ring. Note the conical shape to the 100 number dial. Remember, Hall's used 130 number dials on their fire safes (which is a dead giveaway). Hall's also used several different handle styles, including L-handles in addition to the more commonly used T-handles.

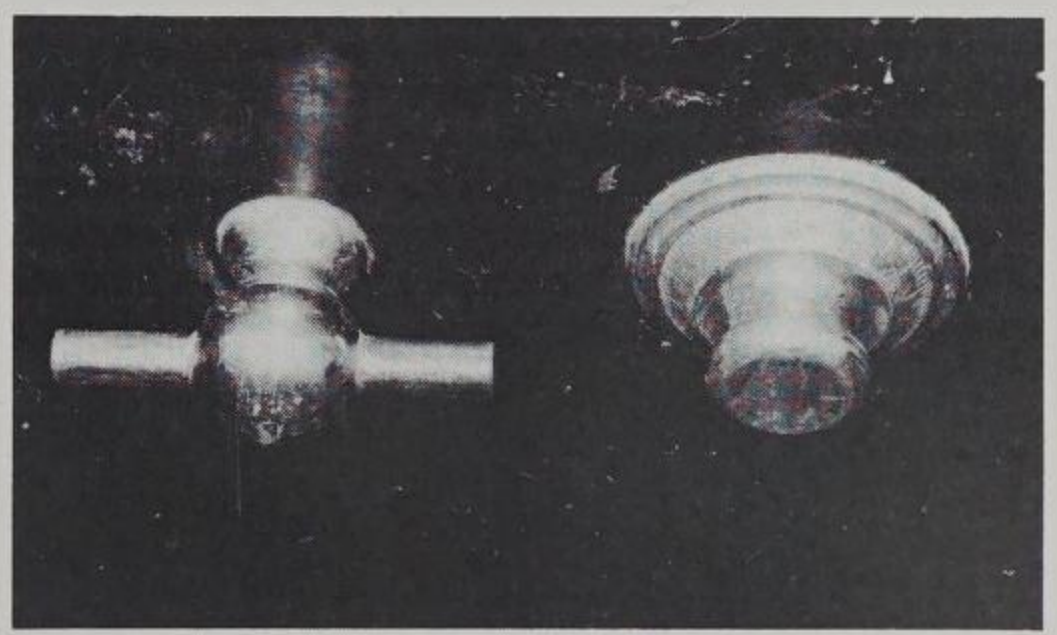


1. Hall's fire safe.

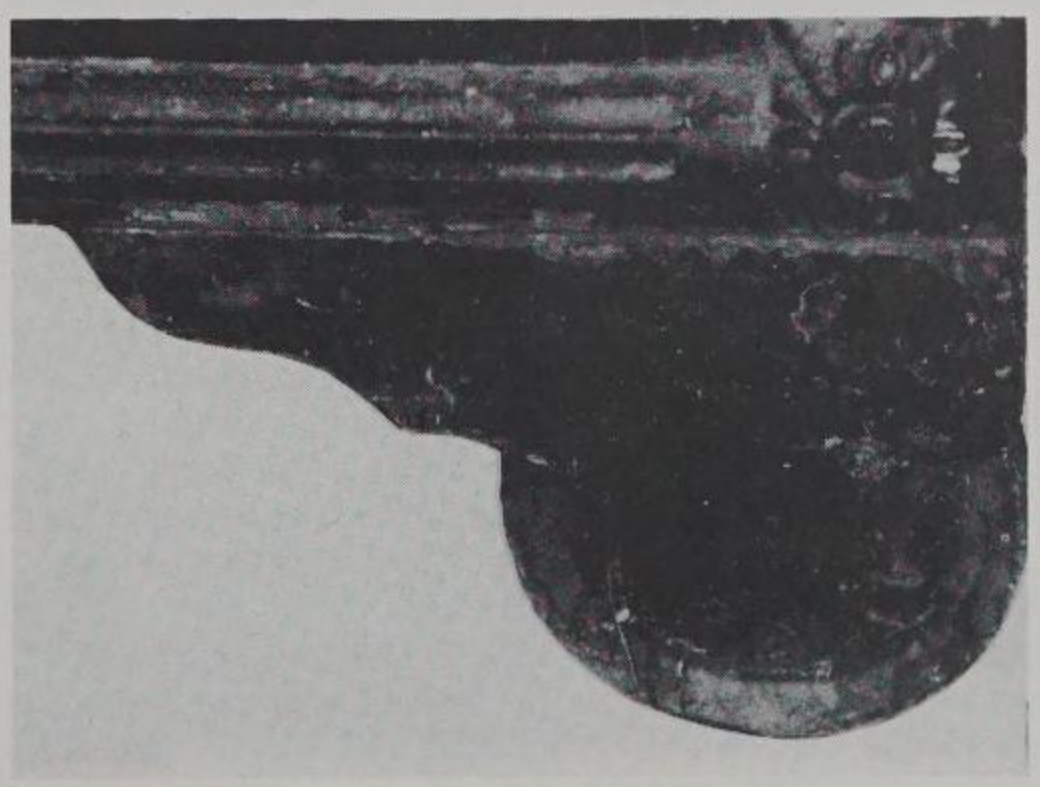
Photograph three is of the caster and its surrounding area. Note the shape. As many of you know, I have been a student and a stickler for proper identification for many years. If there is sufficient interest, perhaps we can persuade Marc Goldberg to commission yours truly to write a manual on proper identification. What do you think?

Normally, I like to drill Hall's fire safes just outside the dial ring above zero. Angling sharply down, the hardplate can be bypassed, and a hole can be placed in the lockcase. At this point it is (usually) a simple matter to transfer the wheel gates from 0 over to 75 where the straight-tailpiece is patiently waiting the proper line-up.

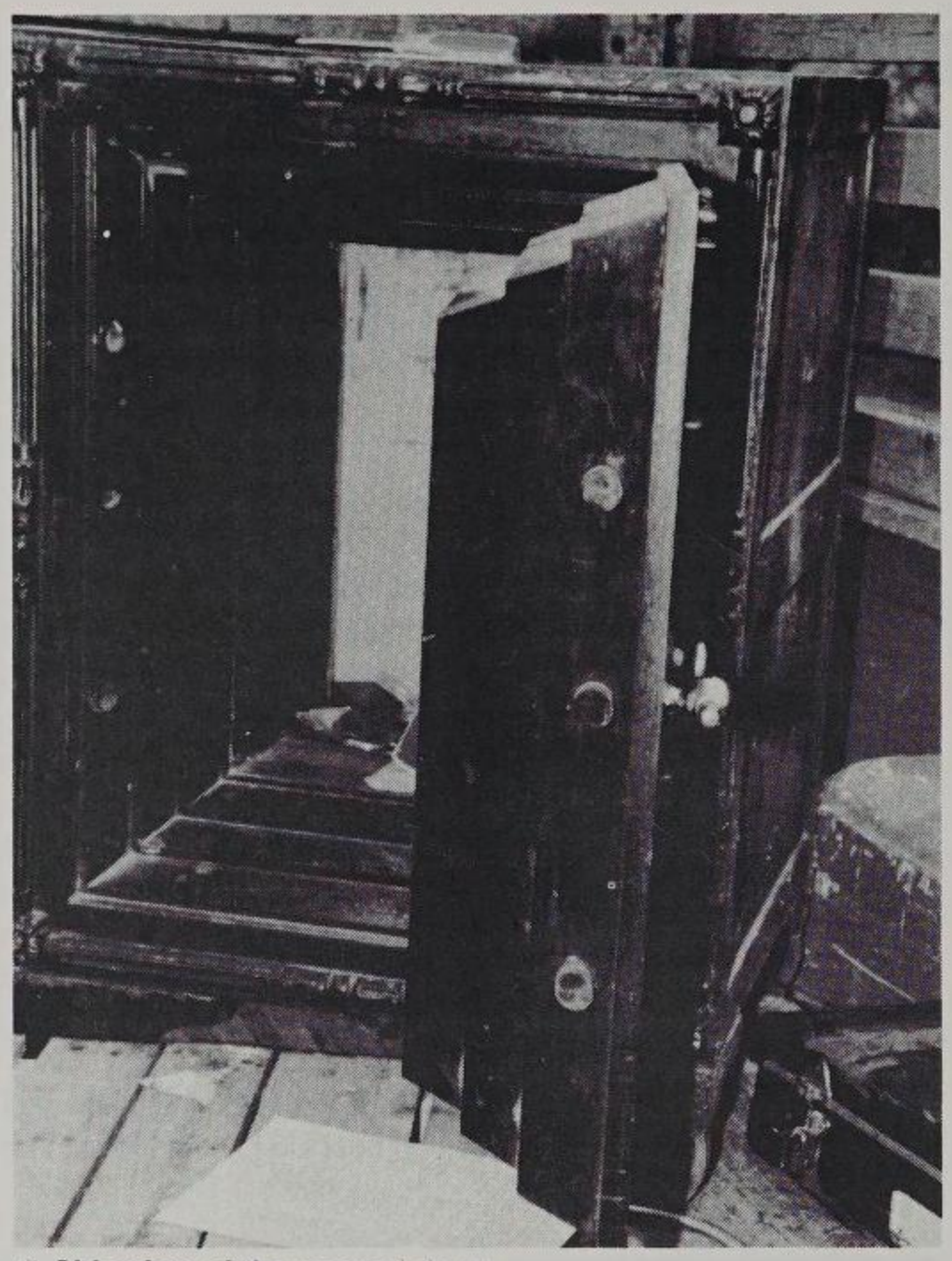
However, on this day I felt like trying something new, so I drilled in at an angle at 77 from just outside the dial ring. The



2. The dial and ring of the Hall's safe.



3. The caster at the base of the safe.



4. Side view of the opened door.

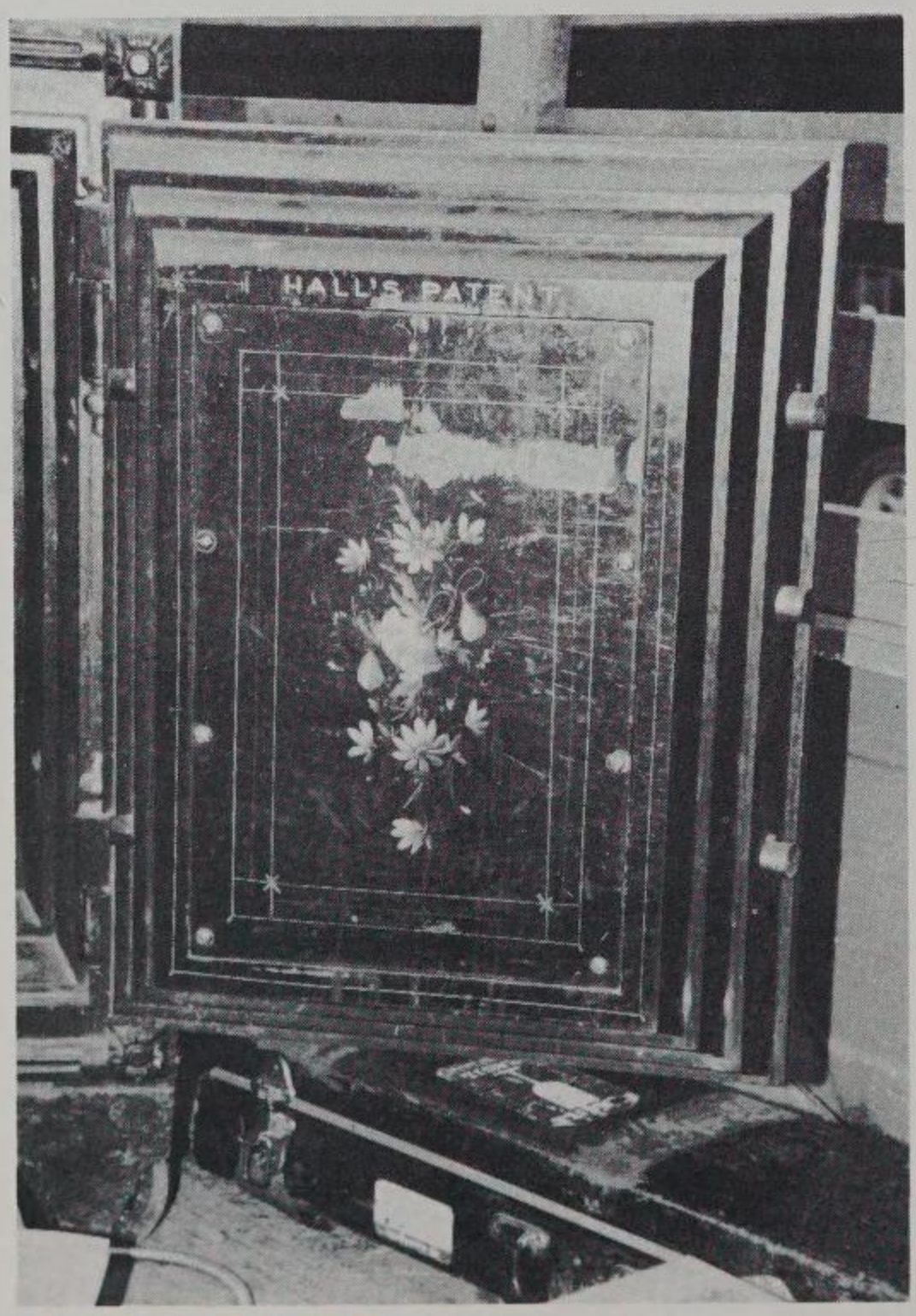
idea was for the hole to bring me in just at the edge of the lockcase. Then I could insert a scope and peek through the small crack between the lockcase and tailpiece. But the hole came out too close to the lockcase, and given the angle of the hole, I could not get my scope in. So I went ahead and put a hole in the lockcase and lined the gates up at the tailpiece. The safe was open.

Even though my attempt failed, I still think that peeking through the crack is a viable opening technique. If you try it, remember that the relocker may be in your way if you drill above the tailpiece; you may want to do as I did and drill below it. Just lessen the angle and you should come out perfectly.

With the theory lesson out of the way, let's finish our examination of the Hall's safe that was opened. Photograph four is a side view of the door. There are three locking bolts on the side; there are no top or bottom locking bolts. Notice how close to the front of the door the locking bolts are.

Photograph five shows the back of the door with the back panel still attached. In addition to the three locking bolts, we can now see the two deadbolts on the hinge side of the door. These, of course, are to prevent the door from being opened by removing the hinge pins.

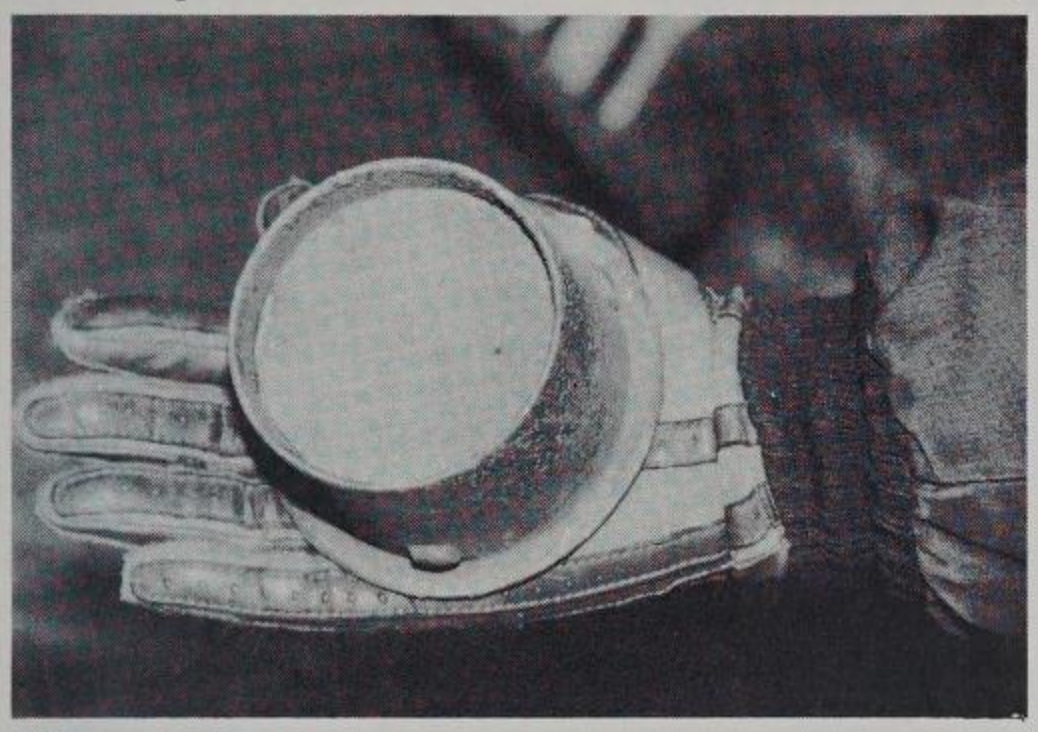
Photograph six is depressing. With the back panel removed, we can see that the boltwork is still kept secret from us. To get to the actual boltwork, we would have to dig out all the fire clay, and that is something I will not do. Those kind of jobs get the Mc Omie referral to someone else. All we can see in this photograph is the round fire plug covering the hole to the lock in the center of the door.



5. Door back with panel still attached.

6. Back panel of safe removed, not revealing boltwork.

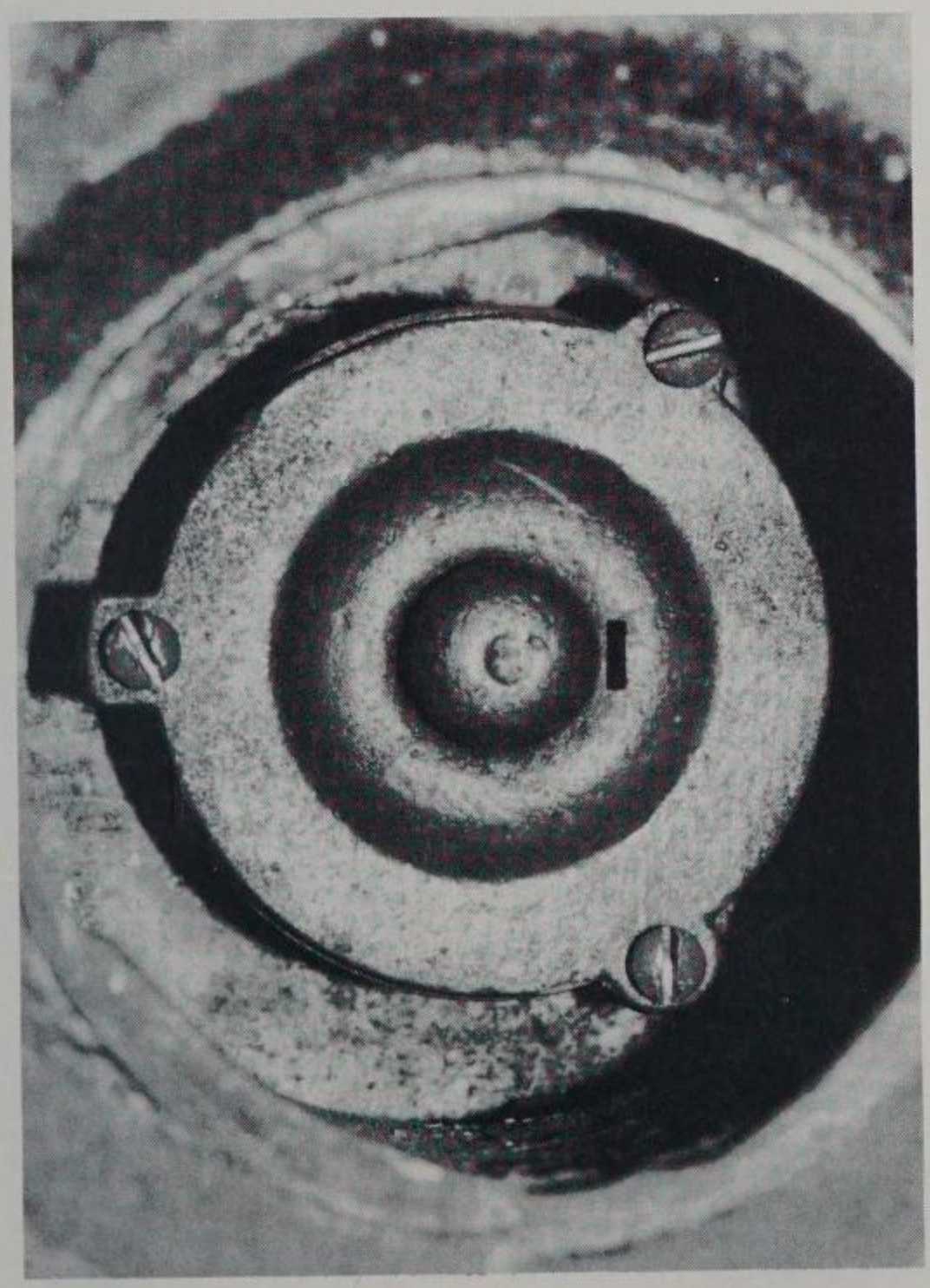
In photograph seven we see the plug. It is a fairly simple device, intended to give fire protection to the hole going to the lock. Whether or not these were effective I have no idea. For that matter, I have no real idea how fire resistant a lot of these antique safes would be in an actual fire. We know they



7.The safe plug.

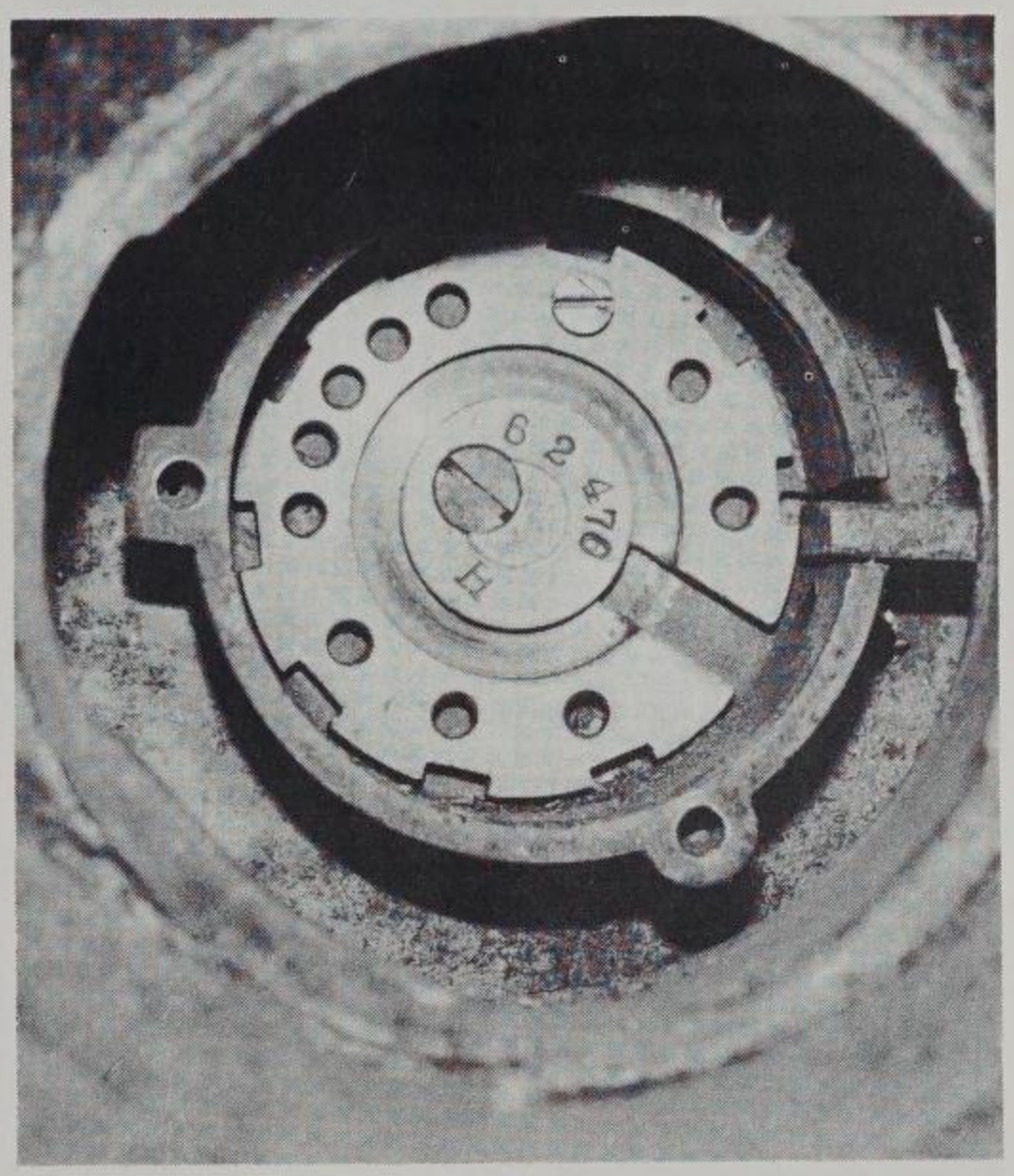
do not carry any certification labels by U.L. or anybody else, but as a practical matter what can we know about their fire resistance? The answer is not much. Some antique fire safes come through fires just fine; others fail miserably. In my personal opinion, we are best off to sell antiques as antiques, and not as fire safes. That approach will protect us as well as our customers.

With the plug removed, as in photograph eight, we can see through the hole and spot the back cover of the straight-

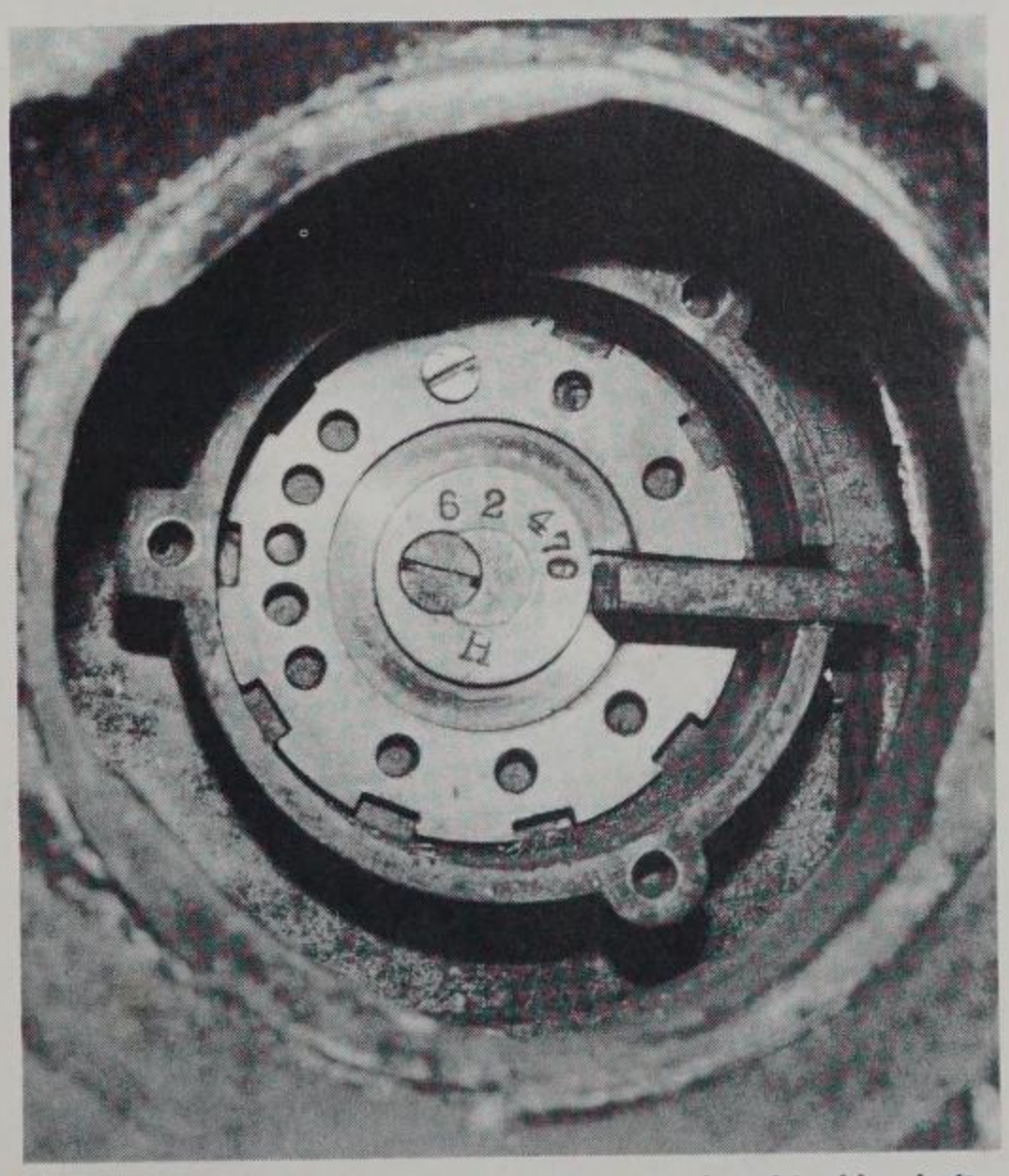


8. Back cover of the lock visible through the plug hole.

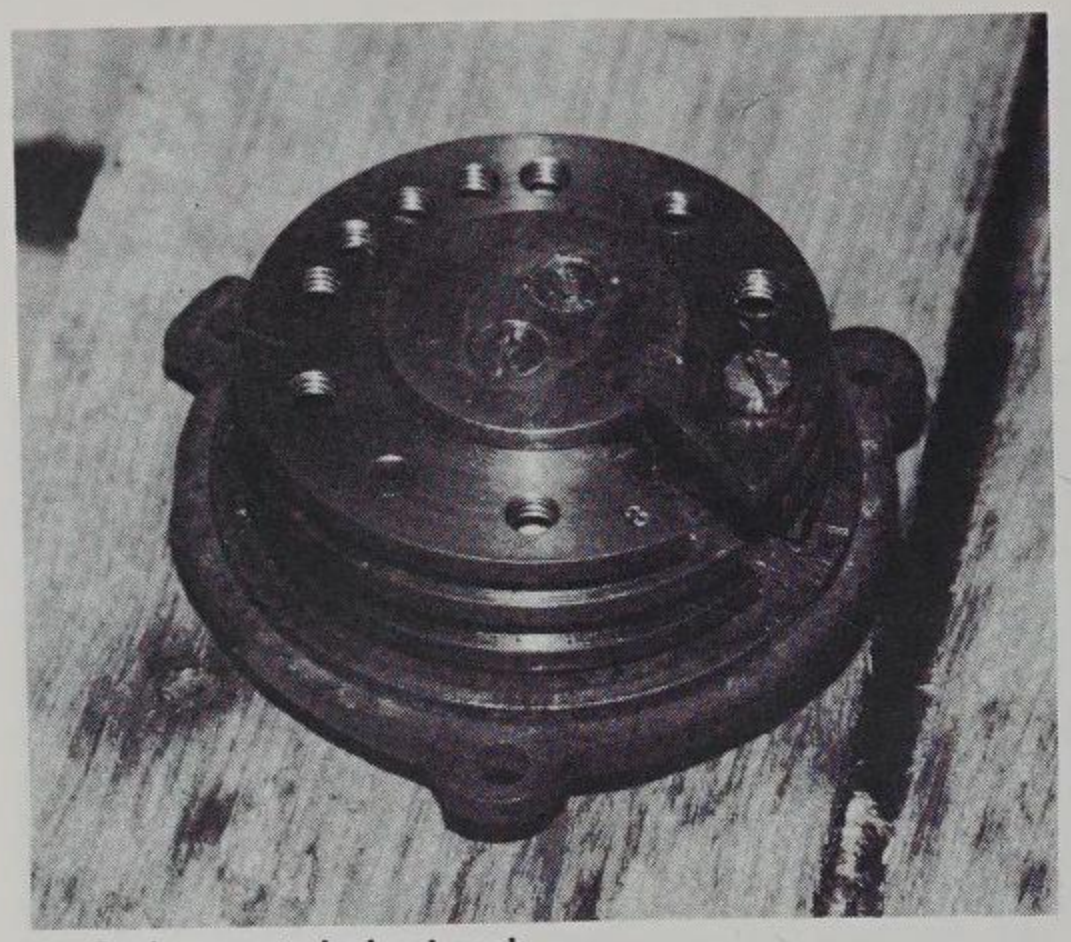
tailpiece lock. Notice the small slot in the back cover. This provides us with a convenient way to determine the combination after it has been changed. Insert a small flat steel key (cut to size) into the slot. While keeping slight inward pressure on the key, rotate the dial until the key pops in a little. The key has found a gate, so record the number, reverse



9. Back cover with wheels attached.



10. Gate and driver lined up, handle rotated and locking bolts retracted.



11. Curb-mounted wheel pack.

the rotation of the dial to find the next gate, and so on until you have the combination.

In photograph nine the back cover with the wheels attached has been removed. We can now see the driver and the tailpiece. Notice the false gates in the driver.

In photograph 10 the gate in the driver has been lined up and the handle has been rotated, retracting the locking bolts. Notice that the tailpiece is fully engaged into the gate cutout in the driver. You may also notice the absence of a relocker. This Hall's indeed did not come with a relocker. However, most of them did.

In photograph 11 we have the curb-mounted wheel pack. There are three screw-change wheels. The wheels are numbered for ease of reassembly.

Well, that about wraps it up for this month. Stay tuned; same safe station, same safe channel! See y'all next month. §

A Family Of Safecrackers

"The kids and I took turns swinging the mini-sledge, and I was smart enough to hold the punch with a vise-grips instead of by hand."

by Dave McOmie

Yeggs, knob-knockers, burglars, bunglers—whatever you want to call those guys, they sure are dumb. But, they keep us out of the soup line!

I got a call from a distraught night club owner early one Saturday morning. A successful and unsuccessful burglary had taken place the night before. Successful because they got in...by chopping through the ceiling. Unsuccessful because they failed to get the safe open. They beat the heck out of it, but the old cast iron safe that I could not identify stayed shut. Good. I love it when a safe is victorious over a yegg.

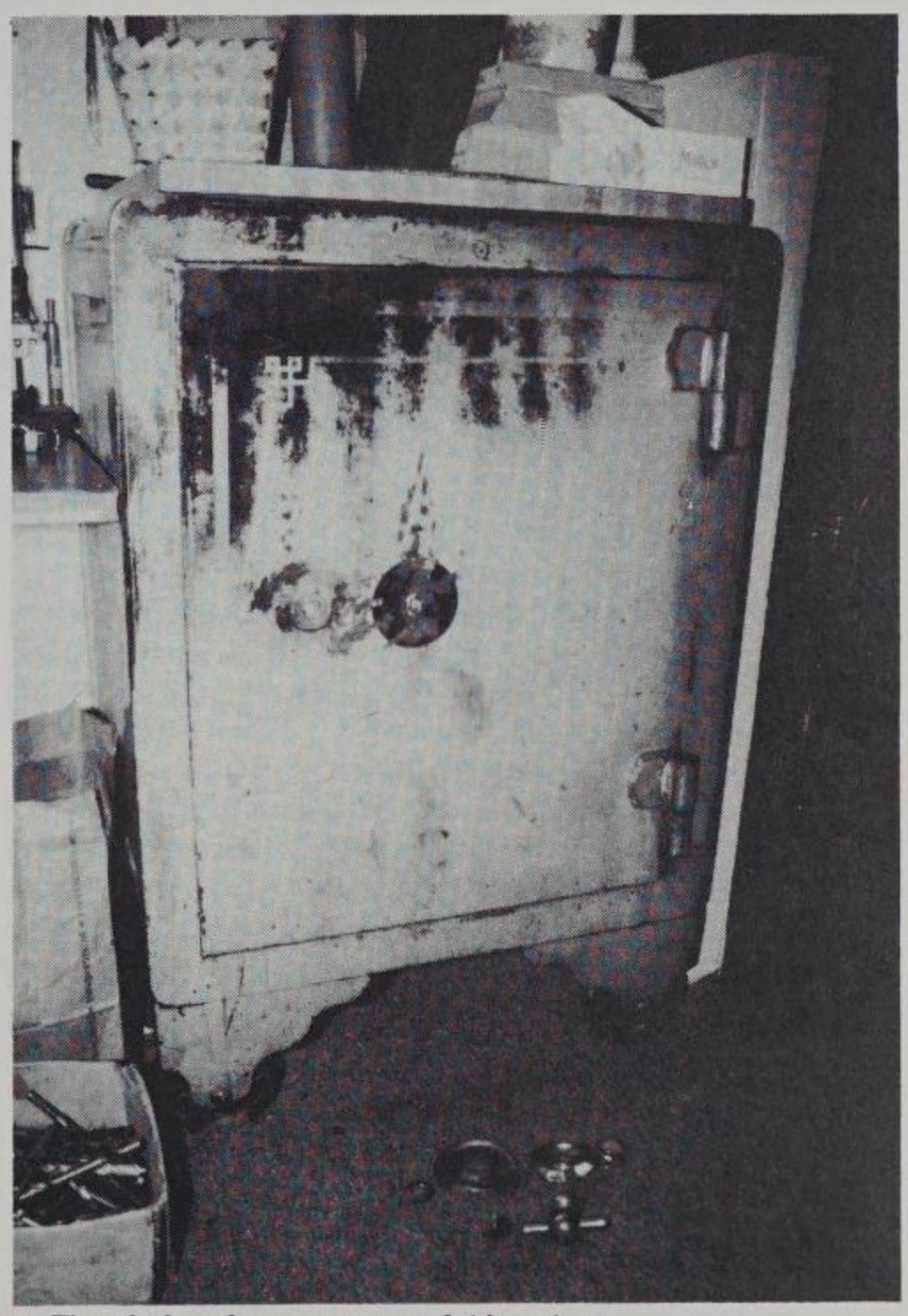
But I had a problem. This was my weekend to spend with my kids. How was I going to open the safe and watch the kids at the same time? Easy: start an apprenticeship program. Jenny, 9, and Justin, 6, have watched me open lots of safes in the past, but always on the sidelines with a chaperone. It was time they helped.

We drove up in front of the building as the clock struck 11 a.m. I barely noticed the sign on the marquis that said "dancers" or something like that. As we went inside, the place was empty except for the manager, who said they would not open until 11:30.

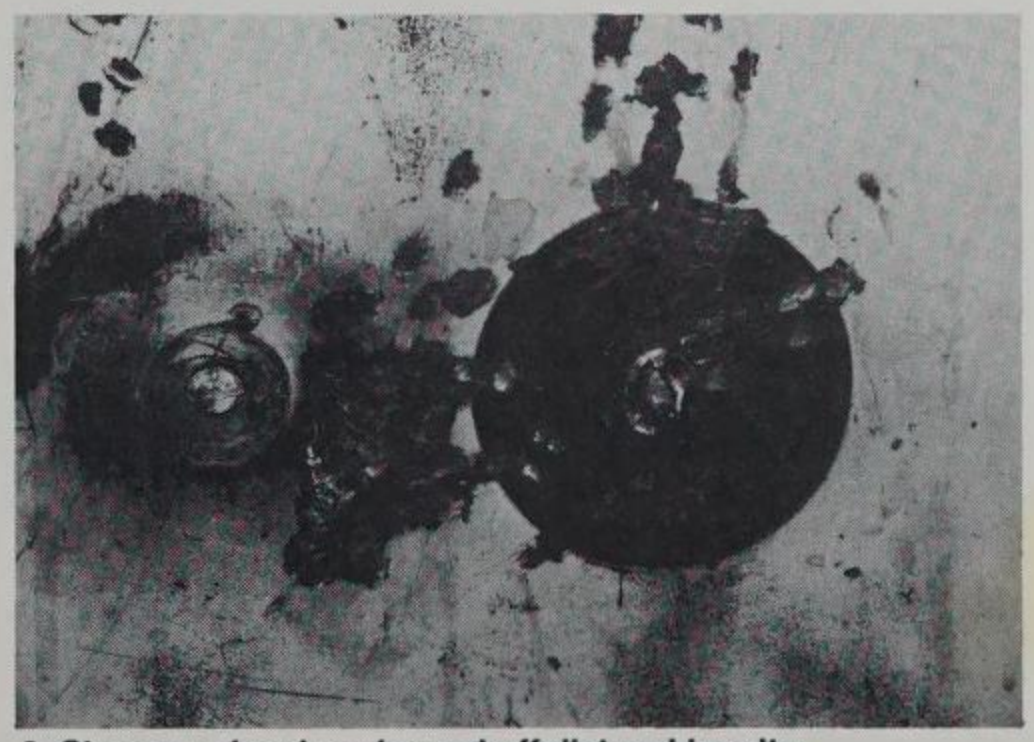
In the office we found our quarry, shown in photograph one. As you can see, the dial and handle were knocked off.

Photograph two is a close-up of where the dial and handle *used to be*. Everything was sheared off flush with the front of the door. The handle shaft was discernible and had movement, but I could not tell where the dial ended and where the door began. In earlier years, I used to waste a lot of time cleaning out the goofed up area around the spindle, drilling and tapping the spindle for an emergency dial, attaching the emergency dial, and trying to dial the safe open. I seldom do that anymore.

In fact, the only time I go through that rigmarole anymore is when the spindle is in good shape and when it is a tough safe to drill a hole in. Otherwise, what's the use? If you know you can drill a safe open in 20 minutes or less, then why the heck spend 40 minutes fiddling with it? Especially when you have to charge less for fiddling than you do for drilling? Now don't get me wrong. I am not, I repeat *am not* drill happy. I am simply becoming more and more aware of the value of time. I am not saying drill first before anything else. Absolutely not. In fact, when it comes to troubleshooting a malfunctioning safe open, I consider myself pretty darned



1. The victim of an unsuccessful burglary.

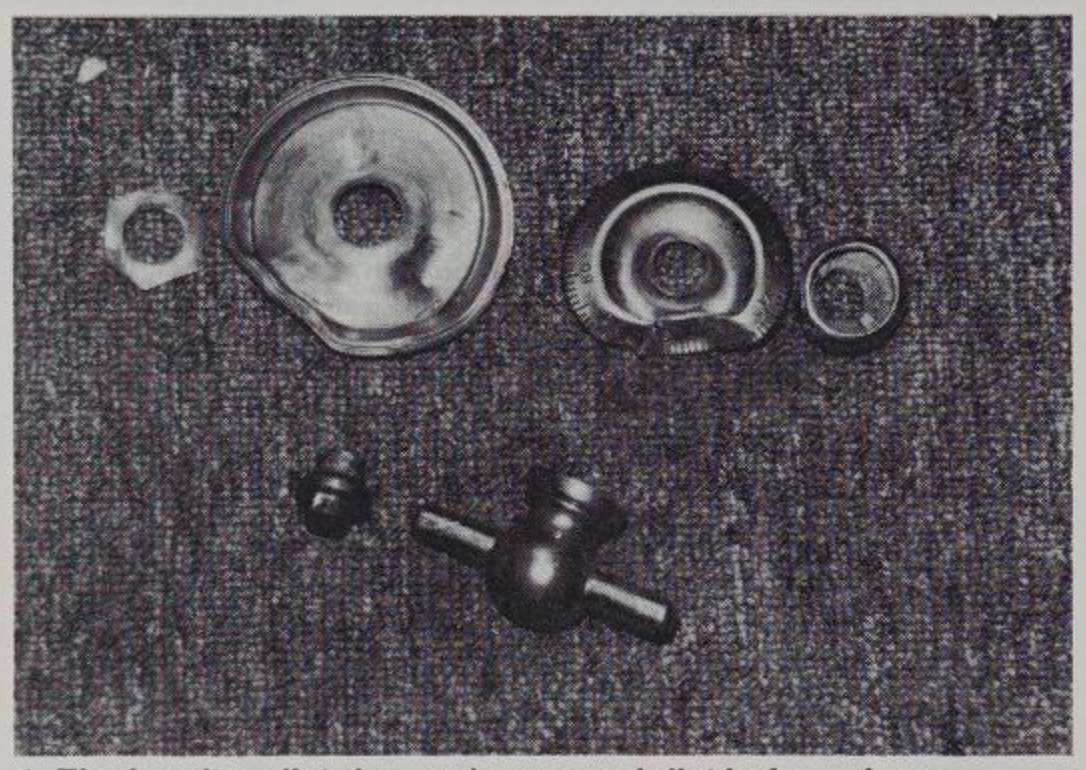


2. Close-up showing sheared off dial and handle.

good. And troubleshooting is a skill that is much too neglected.

But this was not a job for subtle, finessful troubleshooting. Nor was it a job for everyone's favorite hobby, tiddly winks, I mean manipulation. No, this was a job for a real man...and children.

Justin gathered up all the knocked off parts while I got the camera ready. These parts are shown in photograph three. We have here the handle, the dial ring and tube nut, and the dial itself in four pieces.



3. The handle, dial ring , tube nut and dial in four pieces.

For the life of me I could not identify the safe. You know, I just realized something. I complain about guys who spend too much time fiddling instead of drilling, but when it comes to identification, I am just ridiculous. I will spend a lot of time just for the challenge of properly identifying a safe before I will put a hole in it. In the final analysis I guess I have no grounds to tell you guys not to fiddle; after all, in my own weird way I fiddle too.

Due to the Yale dial, I assumed there was probably a Yale OB on the inside. So, I marked the drill point, took a sip of my tomato juice, and turned Jenny loose with a high speed bit to drill through the mild steel. (*See photograph four.*) In the background Justin is trying to find a 5/16x5 carbide bit.

4. Jenny drilling through the mild steel.

Quite often antique fire safes don't even have hard plate, but this one sure as heck did. I had to lean into Black Bart with all my weight to get it to cut. And finally it did. But it was an "airhole."

That's right. Yours truly had guessed wrong on the OB. With my scope I could see that this bugger had a normal rectangular shaped lockcase. I took a look around and saw no sign of tear-gas, detonators or plutonium, so I figured we would go right for the lockbolt.

As I was marking the drill point for the lockbolt hole, the juke box began to blare from the bar. Luckily we were back in the office and didn't have to put up with that newfangled cacophony the current generation dares to call music.

The second hole came out right on the end of the lockbolt. The kids and I took turns swinging the mini-sledge, and was I glad to be smart enough to hold the punch with a vice-grip rather than hold it in by hand! Eventually the lockbolt gave.

With the lockbolt punched back far enough to allow the handle cam to bypass it, the problem now was the handle shaft. This was overcome by drilling a hole in the center of the shaft and gently hammering in a screwdriver. The screwdriver bit into the shaft enough to turn and retract the lockbolts. Happy Days. (Sometimes an Easy-Out works better, but most of the time a sharp-edged screwdriver blade will do the trick).

Photograph five shows the inside of the door with the back panel still attached. Visible in this photograph are the two dead, or inactive bolts on the hinge side. You can also see the round logo and the equally round curb-mounted wheel pack.

5. Inside the door. Note the inactive bolts, logo and wheel pack.

In photograph six we have a close-up of the logo. Now I kick myself. Portland's own Pacific Coast Safe & Vault Works—how could I have not recognized it? There is no excuse. Dave, go the blackboard and write "Pacific Coast" a hundred times!

As I was removing the screws that hold the back cover on,

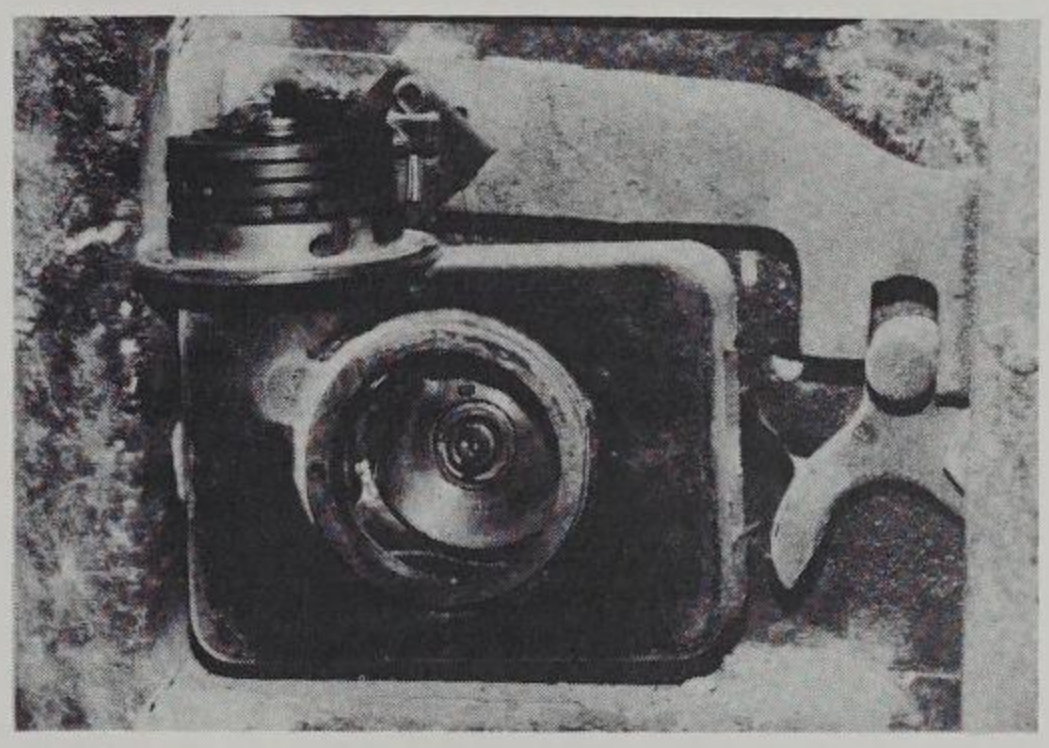
6. Close-up of the Pacific Coast Safe & Vault works label.

I could hear raucous whooping from the bar. Must be a ball game I theorized. Then the juke box came back on. Yech, but oh well.

In photograph seven we have the inside of the door with the back panel removed. There are three locking bolts on the opening side. There are no locking bolts on the top or bottom. This is a very simple, clean and tidy boltwork arrangement.

7. The inside of the door with the back panel rmoved. Note the three locking bolts on the opening side.

My camera got in close for a close-up of the lock. As I snapped photograph eight, the whooping started again. Then the juke box came back on. Good grief, I wondered, how can they watch the ball game and listen to the juke box at the same time? Anyway, in this photograph we have a close-up of the lock. Sitting atop the lock is the wheel pack, made up of four 1-7/8" diameter wheels. For your information this is either a Yale 024 (which was available in a 4-wheel version) or a Yale 028 (which only came 4-wheel). I am not sure which, so if any of you know with certitude which lock this is, I would love to hear from you.



8. Close-up of the safe's lock.

As the kids packed up the gear, I decided to go get the manager. As I opened the office door, that awful music hit me like a pail of cold water, but I trudged on. What I saw next stopped me dead in my tracks. I was about ten feet away from an extremely well-built young lady who was doing amazing gyrations on a small stage. Shades of the emperor, she was in her birthday suit!

I immediately turned and blocked the doorway to the office just as my children were trying to see what was going on. Quickly I shut the door and told the kids not to move, that I would be right back. Gawd I was embarrassed. I went back out, found the manager, and explained my predicament to him. He began to laugh. Not just a little titter, but big guffaws that began to attract attention. The juke box stopped, and the Dolly Parton look-alike (and this girl had red hair!) said "What's so funny, Bob?" Bob stopped guffawing just long enough to tell the whole dadgummed world what was going on. Gawd I was *really* embarrassed.

Dolly giggled, and slipped into something that kind of covered most of her, uh, endowments. I collected from Bob, opened the office door and told J & J to march straight to the front door. Everyone cheered and waved goodbye to us as we left. All of a sudden it dawned on me that we were the ones on stage!

On the way home it all began to make sense. The juke box, the whooping, the marquis. Good grief, I would never make it as a Columbo. I guess the moral of the story is to make sure the job is a PG-13 or less before you take the kids. But it worked out okay, even though I'm sure I left a screwdriver back at the bar. Or was it a drill bit? No matter, I'll go back and get it tomorrow...and maybe the next day too.... §

I went back and retrieved a misplaced tool, but Dolly wasn't there.
Heck, it it weren't for bad luck, I'd have no luck at all!

A Burglarized Diebold

"This month it was a Diebold the burglars had bungled. When I looked at it I couldn't help but let out a wistful sigh. It was mangled!"

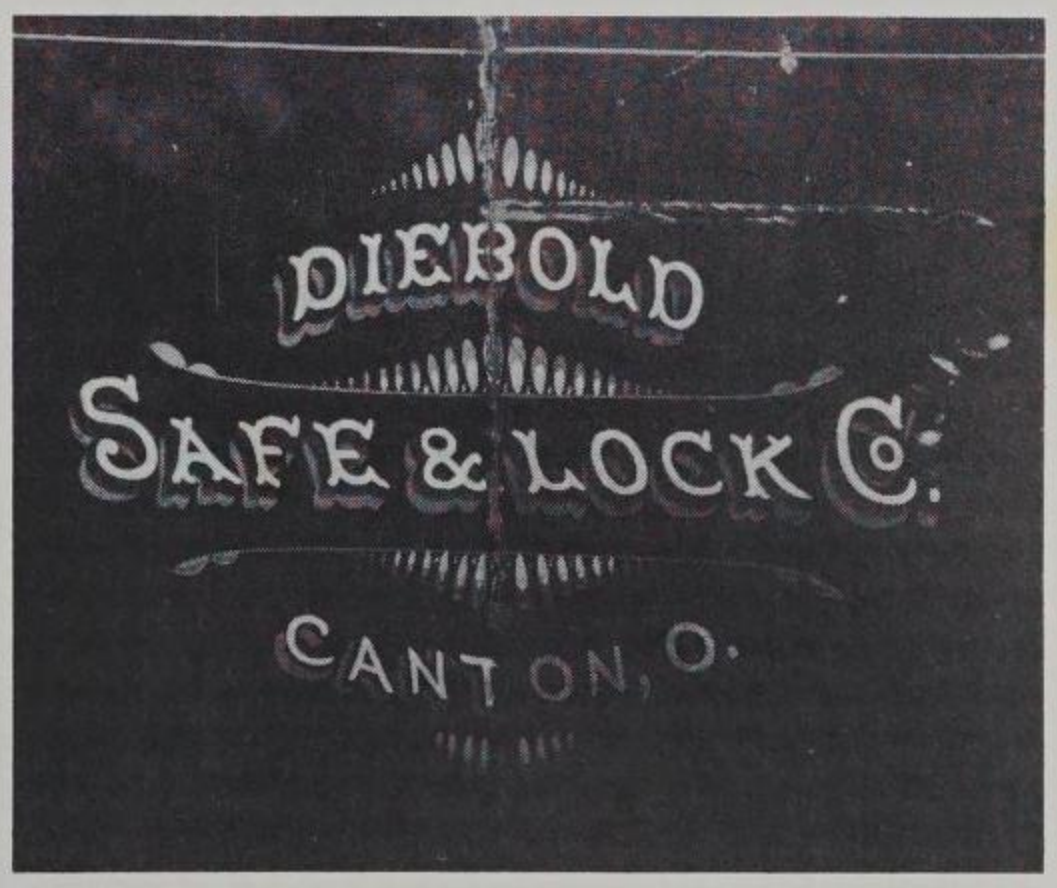
by Dave McOmie

This is the season of the bunglars. Last month we examined the bunglarized safe at the, ahem, nudie bar. This month we will examine another burglary at another bar. This time Jenny and Justin weren't with me, and wouldn't you know it, this time there was no floor show. It figures. When the kids come along, dad has to miss the show; when the kids don't come along, there is no show. Oh well, I can still go back and get that screwdriver I left at last month's job! Or was it a drill bit?

1. Burglarized Diebold safe.

This month it was a Diebold that the bunglars bungled. (*See photograph one.*) When I looked at it, I couldn't help but let out a wistful sigh. The old Diebold was in near perfect condition before the bungling boobs beat the heck out of it the night before. Those dadgummed bunglars. Yesterday this safe was a cherry; today it is nearly an anchor. As you can see, there are hammer marks all over it. Notice where the dial used to be. Yep, that is a screwdriver sticking out of the spindle hole.

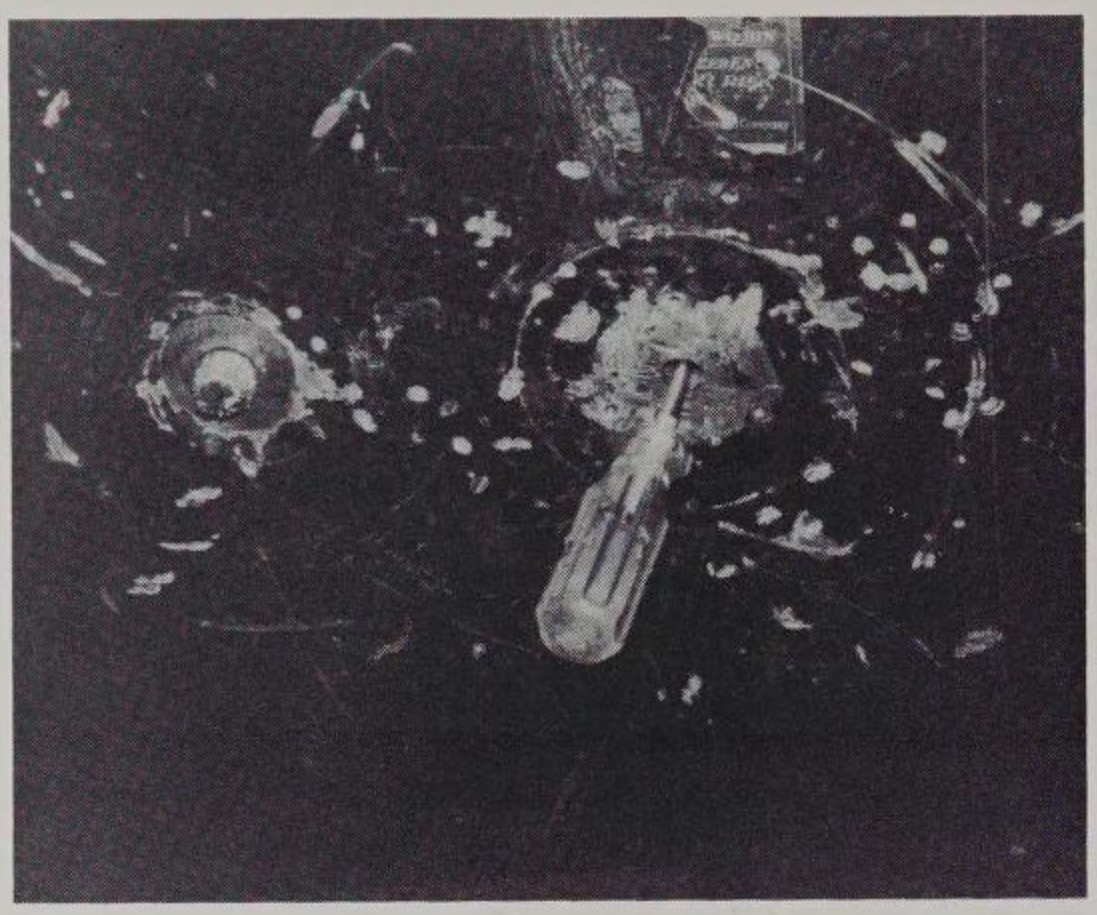
In photograph two we see the manufacturer's logo on the front of the safe. In gold-leaf lettering is "DIEBOLD SAFE & LOCK CO., CANTON,O." I guess this was in the days before the post office came out with official state abbreviations. It was a little presumptuous of Diebold to expect everyone to know which state they meant by "O" wasn't it? After all, there are at least three states that I can think of off the top of my head that begin with "O," not the least of which is my native Oregon. Maybe that's why it bothers me!



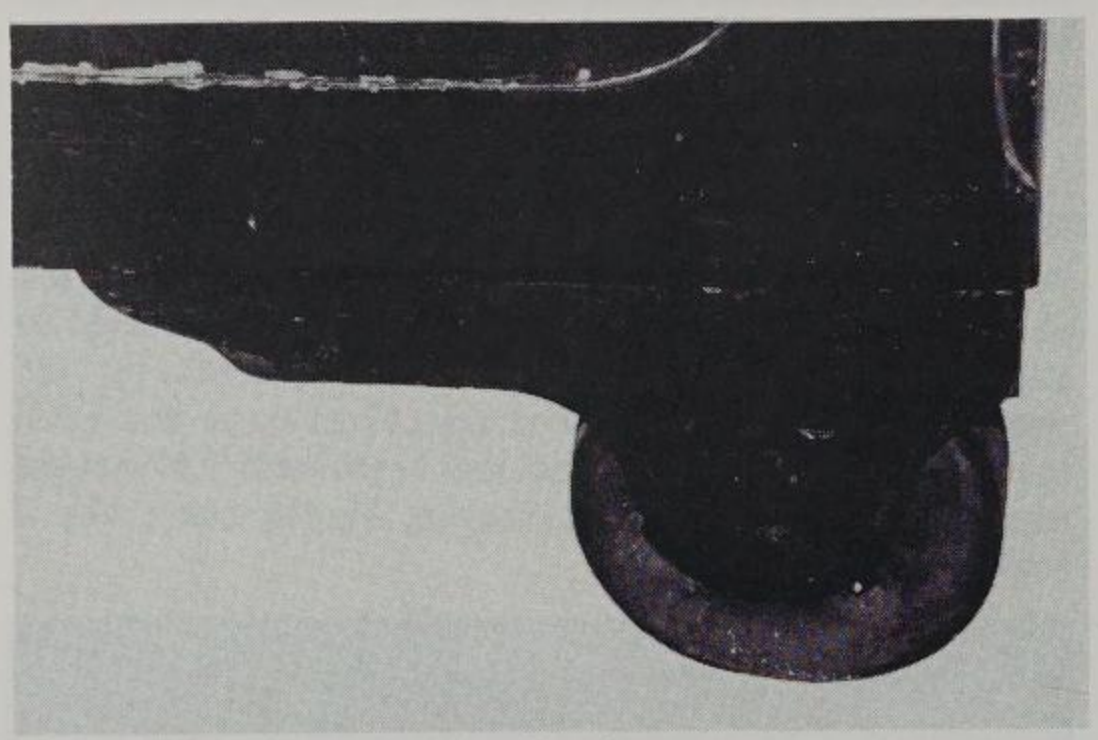
2. Diebold logo.

As we move down the door in photograph three we can see the area where the dial and handle *used to be*. They are both missing, compliments of our friendly bungling Bozo. The screwdriver sticking out of the hole was stuck, and I mean stuck! I applied every pulling device I had, but the screwdriver only got tighter. And to make matters worse, the wheel pack was virtually welded to the screwdriver, which made drilling for the fence less than desirable.

While I was pondering the best method of attack, I thought to snap a couple of identification photos. In photograph four



3. Location of missing dial and handle.



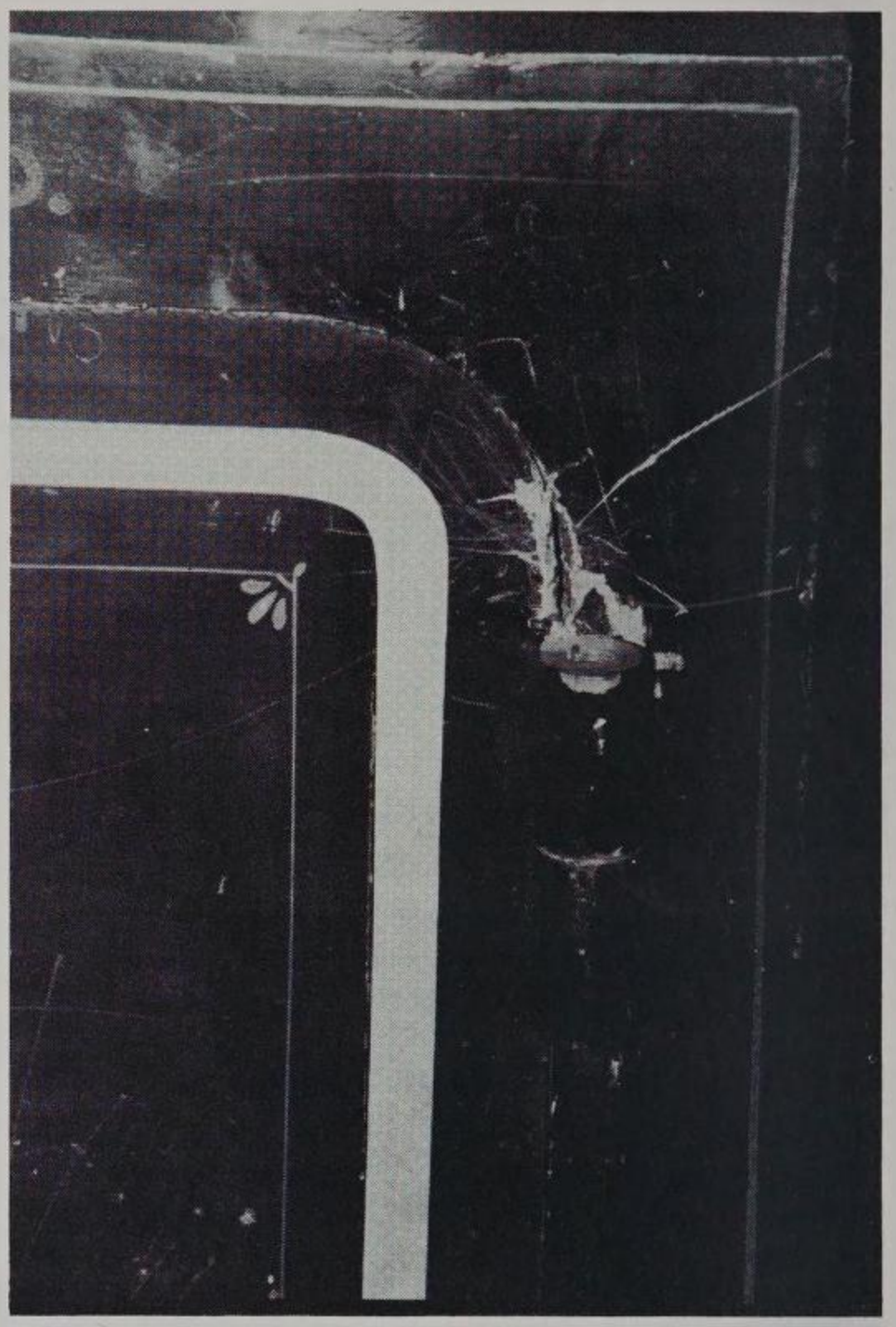
4. The Diebold caster for identification purposes.

we have the Diebold caster. This is a good one to add to your inventory of I.D. photos because these were very popular safes.

Laying on the ground next to the dial and handles was the hinge tip, or acorn, shown in photograph five. This made me a little suspicious, so I zoomed in for a close look at the hinge.

5. The hinge tip (acorn) of the safe door.

In photograph six we have the area around the top hinge. Note the classic Diebold rounded door corners, and notice the



6. Hinge top (notice pry marks).

heavy pry marks just above the hinge. Looking in the top hinge pin hole, I could see clear through the hole. There was no hinge pin—the bunglars had removed it. So I looked around on the floor, found the hinge pin and pounded it back in.

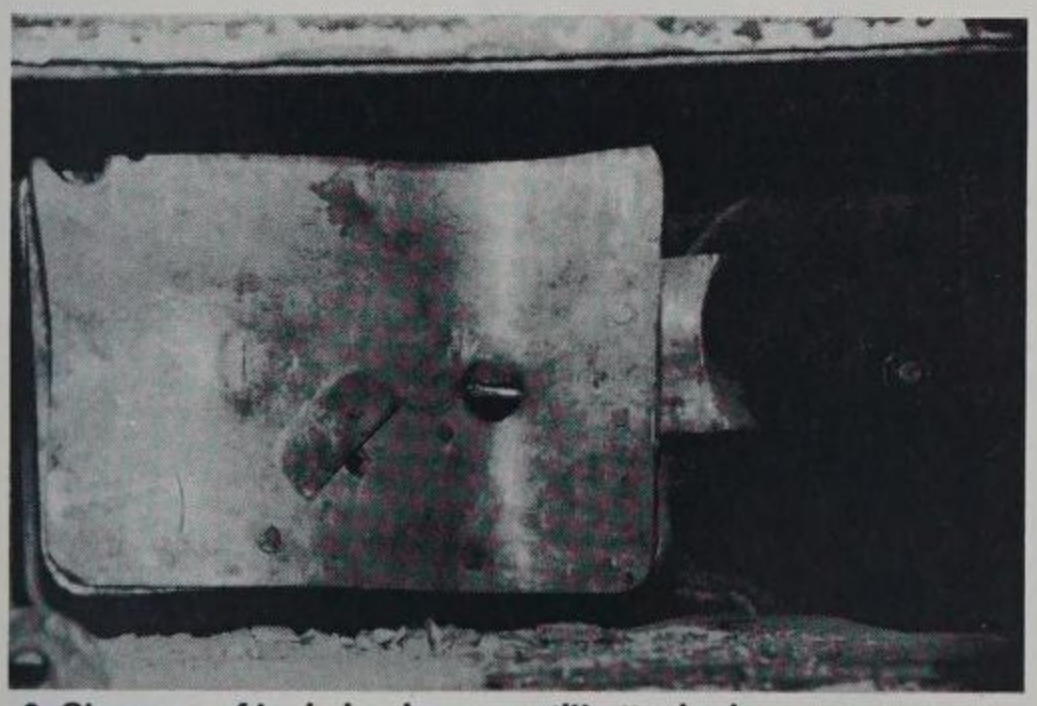
I hate to sound like your mother, but always always check the hinges and hinge pins after a burglary. Look carefully at the hinge for signs of a hacksaw at work. I have seen hinges that were cut almost completely off the body. At first glance they look fine, but as you swing open the heavy door, they break off and leave you wishing you had answered that Charles Atlas ad years ago. Another favorite of the mental midgets is to cut the hinge pin in half. This also looks fine at first glance, but as soon as you swing the door open, it will be in your lap, or on your toe. The point is to examine the hinges carefully, so you can spot the little telltale signs that go unnoticed at first glance.

Since the owners were planning on buying a new safe, I decided to finish what the bunglars started. There is hardplate in these old Diebolds, but with our modern tools and equipment, we hardly even notice. I drilled at the end of the lockbolt and punched it back far enough to allow the handle cam to clear. Clamping a pair of vice-grips on the remaining handle shaft, I rocked them back and forth a few times and the boltwork retracted. With a flourish I flung the door open, much to the owner's delight.

Photograph seven shows the double-door Diebold with both doors opened. Notice how thick the doors are. Also visible in this photo are the inner keylocked doors.

7. Diebold with the doors open (note door thickness).

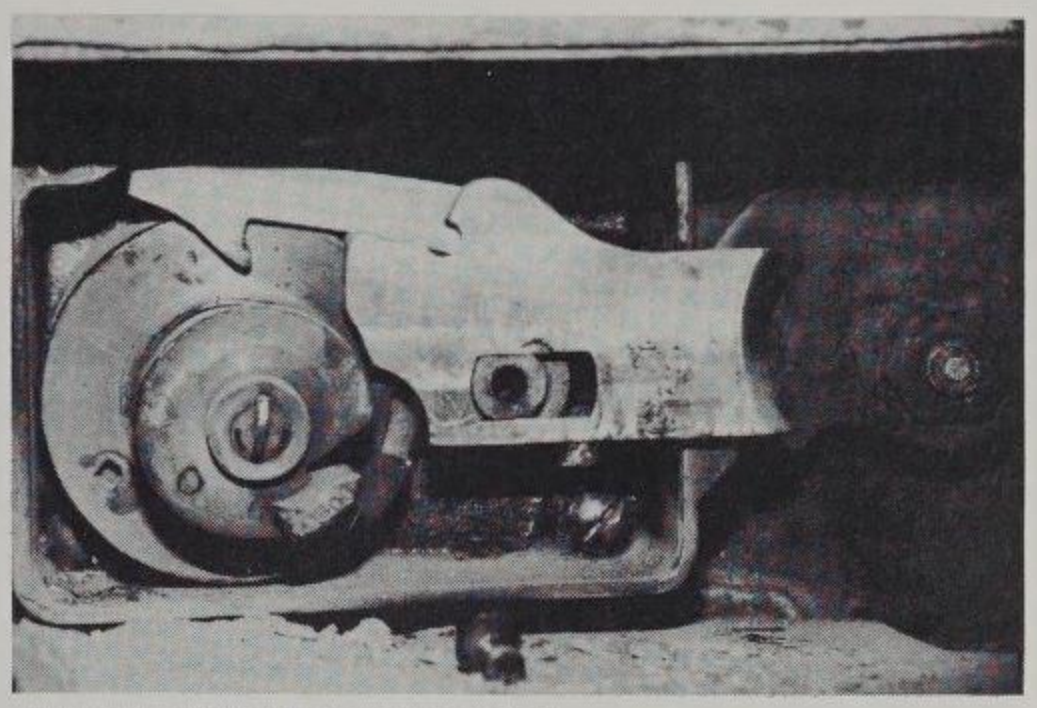
In photograph eight we have a close-up of the lock with its back cover still attached. This lock was a little unusual in that it was not black, like the usual iron-case lock are, nor was it bronze like the bronze case locks are. It was dull and silver. I am not sure whether it was manufactured by Eagle or by Peerless. Anyone reading this who can positively identify this lock, please contact me in care of this magazine.



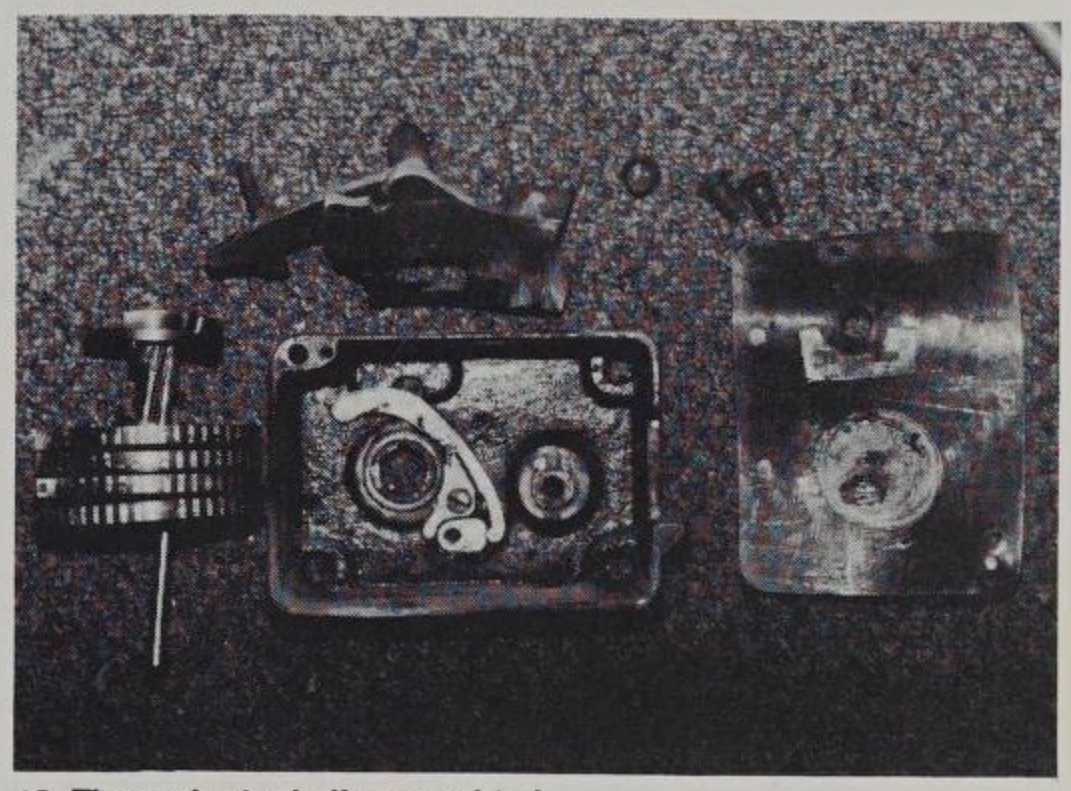
8. Close-up of lock, back cover still attached.

In photograph nine we see the lock with the back cover removed. This is a 4-wheel combination lock with a wheel diameter of 2-1/2". Observe the lockbolt—even though it was punched in far enough to allow the handle cam to rotate, the lockbolt is still intact, just bent a little.

In photograph 10 we have the lock disassembled for our inspection. The lockcase, back cover, lever, lockbolt, mounting screws, the wheels and driver are all there. If you



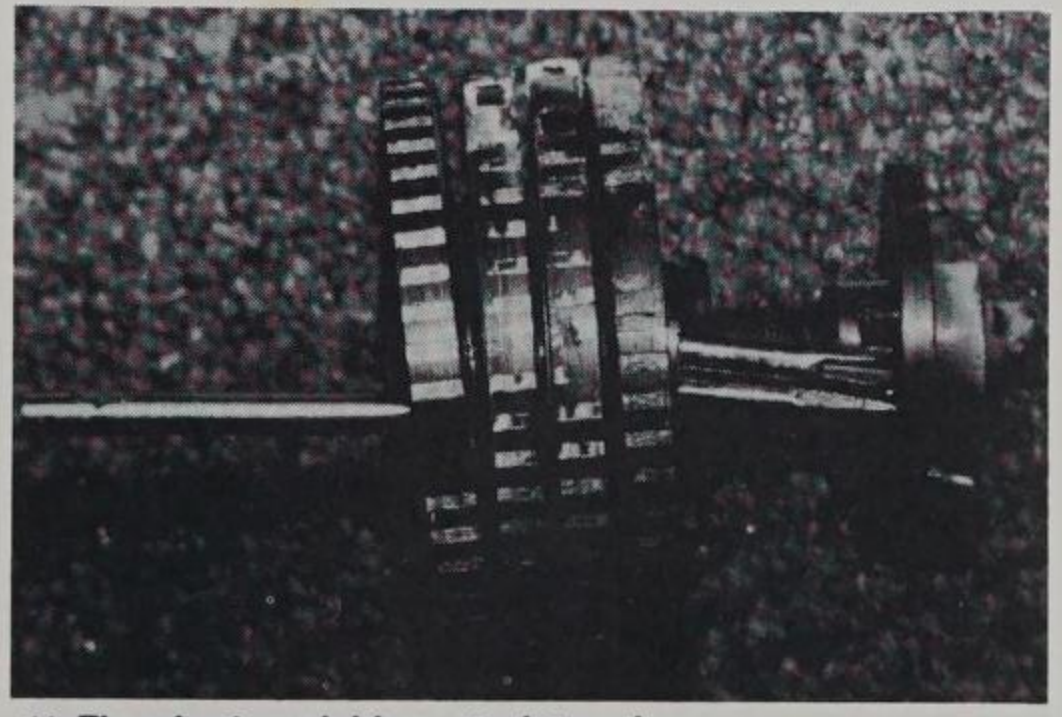
9. Lock with back cover removed.



10. The entire lock disassembled.

think something looks funny about the wheels and driver, you're right. For the scoop simply read on!

In photograph 11 we have a close-up of the wheels and driver. They are stuck together, compliments of the bunglar. I had to grind off the screwdriver handle to get everything apart. And now we can see that there are two screwdriver blades, not one, jammed in the wheels and driver. How unnecessary, and what a mess. But it did help with the mortgage payment.



11. The wheels and driver stuck together.

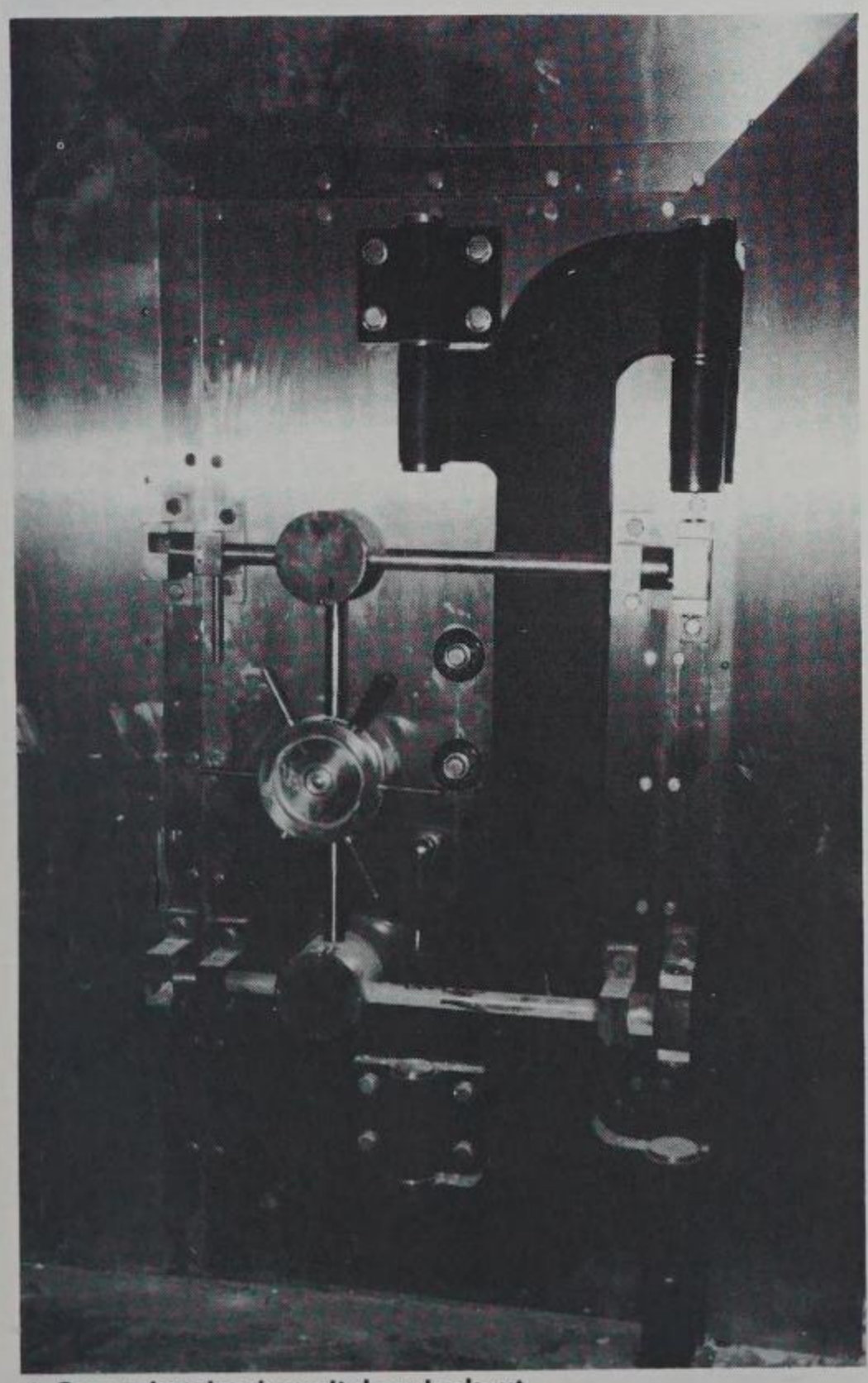
My only regret is that there was no floor show. I'll admit it, last month spoiled me rotten. Now I find myself expecting to be entertained while I work! Next month, an attitude adjustment, as we drill open a bank vault! See ya then. §

Bank Vault Opening

"My adrenaline began flowing when I heard from a customer that we had a bank vault with a lost combination. Of course, it needed opening."

by Dave McOmie

What is the ultimate conquest? Opening one of them there new-fangled six-sided containers, opening a double dial cannonball, or opening a bank vault? Even though I have done my fair share of all the above, I am afraid I don't know the answer. They are all challenging.



1. Secondary bank vault door lockout.

But there is something special about a bank vault. I think we all sense this. When a call comes in for a bank vault, the adrenaline begins to flow in a way that almost nothing else can match.

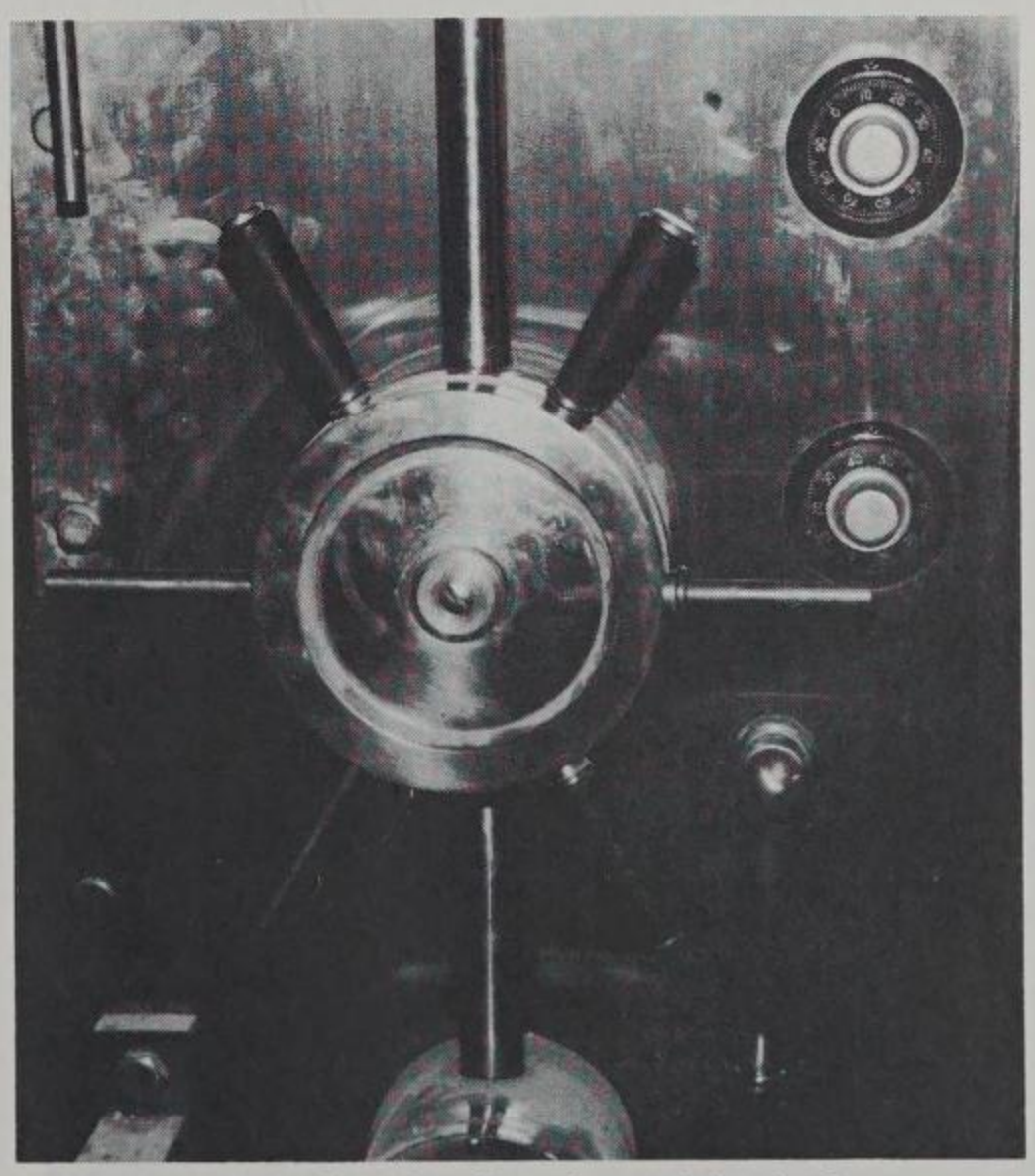
My adrenaline began flowing that way during a phone call from Richard over at Metro Safe and Vault. He had a customer with a bank vault and a lost combination. It was a secondary vault that the bank evidently had not used in some time, due to some remodeling work going on. The vault was normally left open, but one day someone came by, shut the door and locked it (I promise it wasn't me). Calls went out to the various people involved, but no one could remember the combination. So they called Richard and Richard called me. Richard and I agreed on a price for my services, and we went to work.

Photograph one shows our adversary. Those of you with experience in vault doors, try to identify the door.

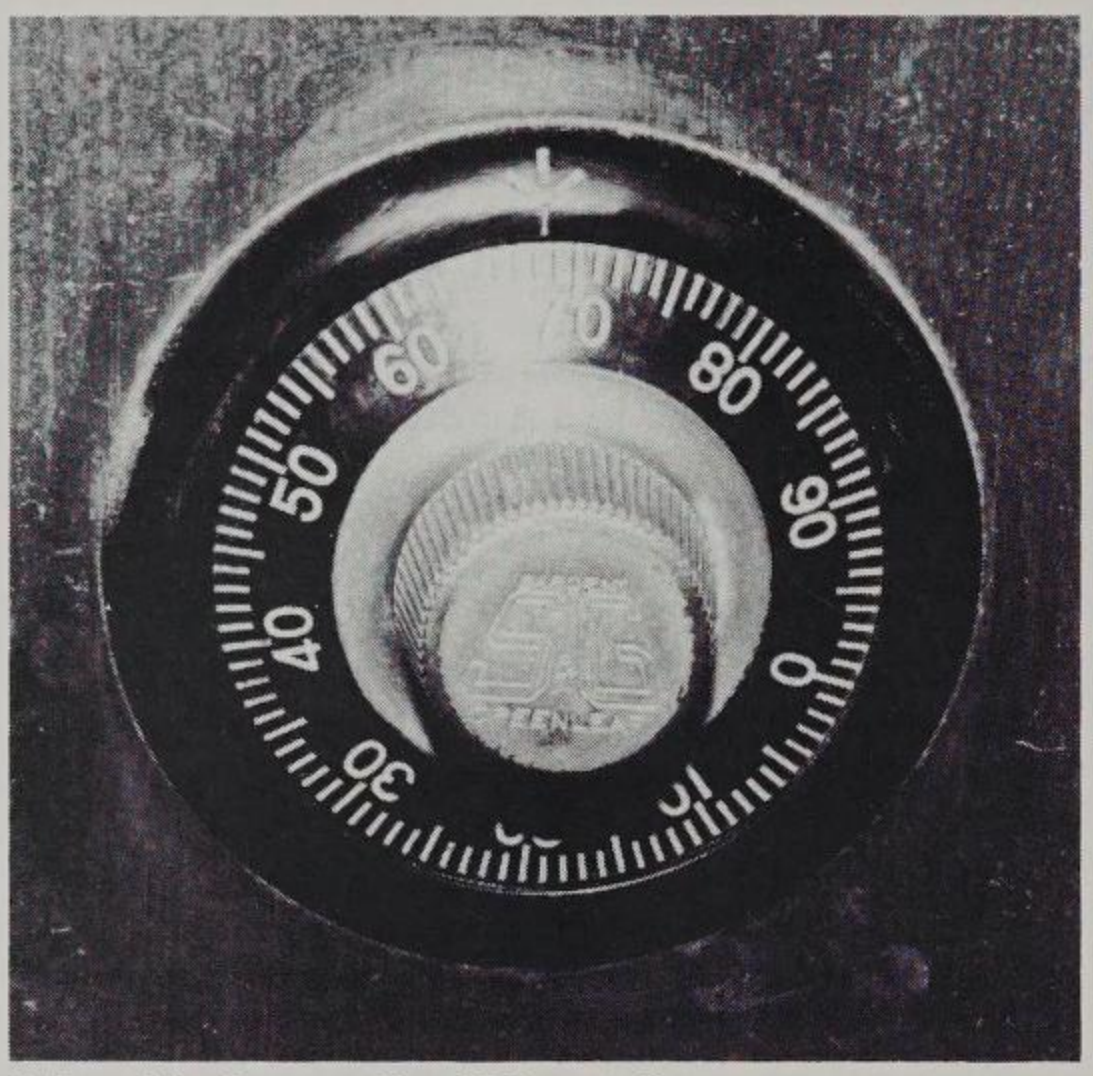
Photograph two is a close-up of the dials, handle and captain's wheel. The captain's wheel controls the pressure system which closes the door securely.

Photograph three is a close-up of the top dial. As you can see, it is a front-reading S&G vault dial.

After spending a little time on my favorite hobby,



2. Close-up of the dials, handle and captain's wheel.



3. Top of the front-reading S&G vault dial.

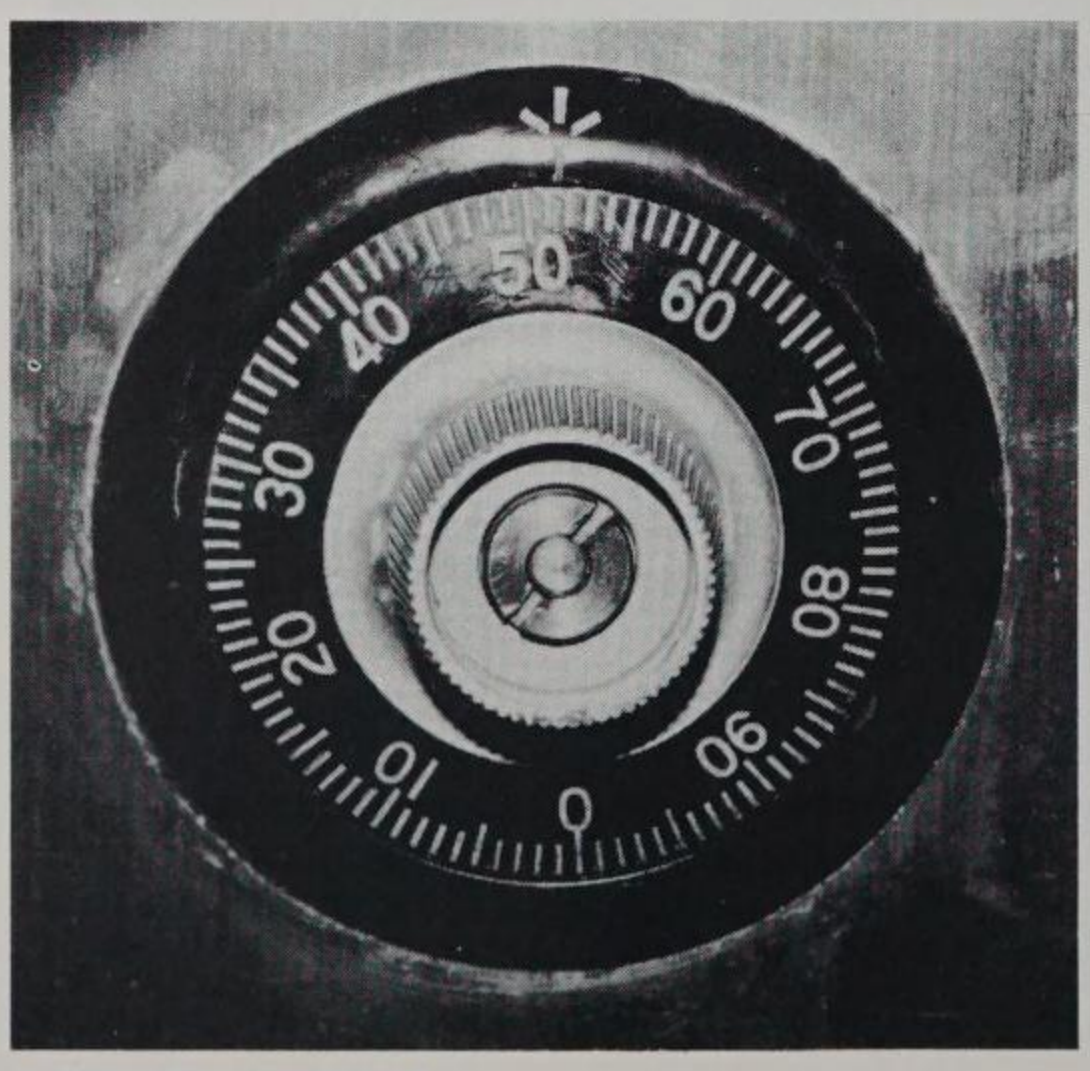
manipulation, we got down to the job of drilling open the bank vault.

In photograph four, the dial cap has been unscrewed revealing the secret way to remove the dial.

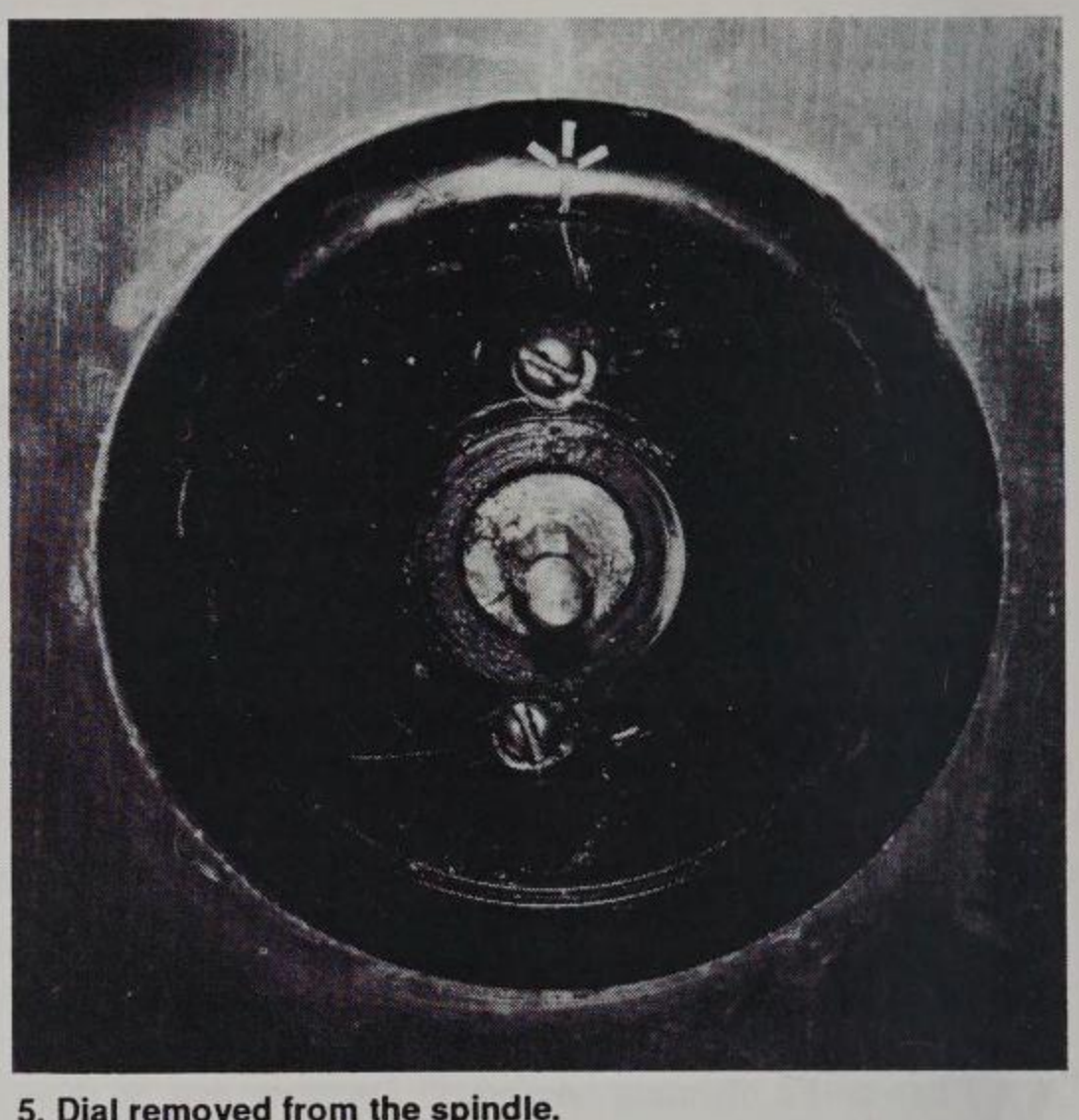
After removing the dial from the spindle, we were left with what you see in photograph five. At this point it was a simple matter to take out the two screws holding the dial ring on, and remove it. This left us with a bare door to work with.

In photograph six, we have the pieces that were removed from the dial spindle.

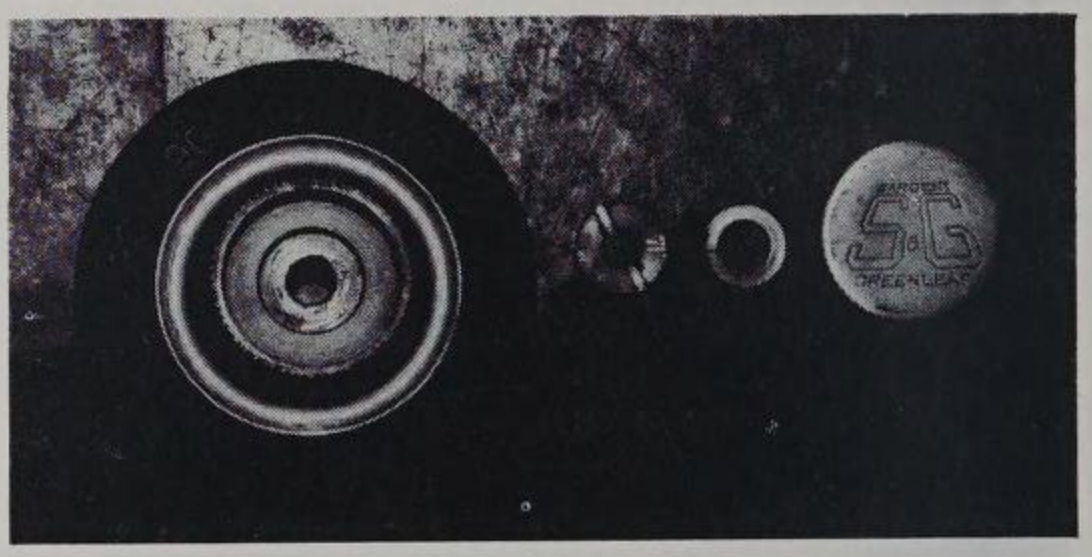
Next, a decision had to be made about where to drill the hole. Feeling confident that an S&G 6500 series vault lock was on the inside, the only question remaining to be answered concerned the mounting of the lock. This is very important, because most bank vaults use indirect-drive locks, which means the offset has to be compensated for when deducing a drill point. I have seen vault doors offset every



4. Dial with cap removed.



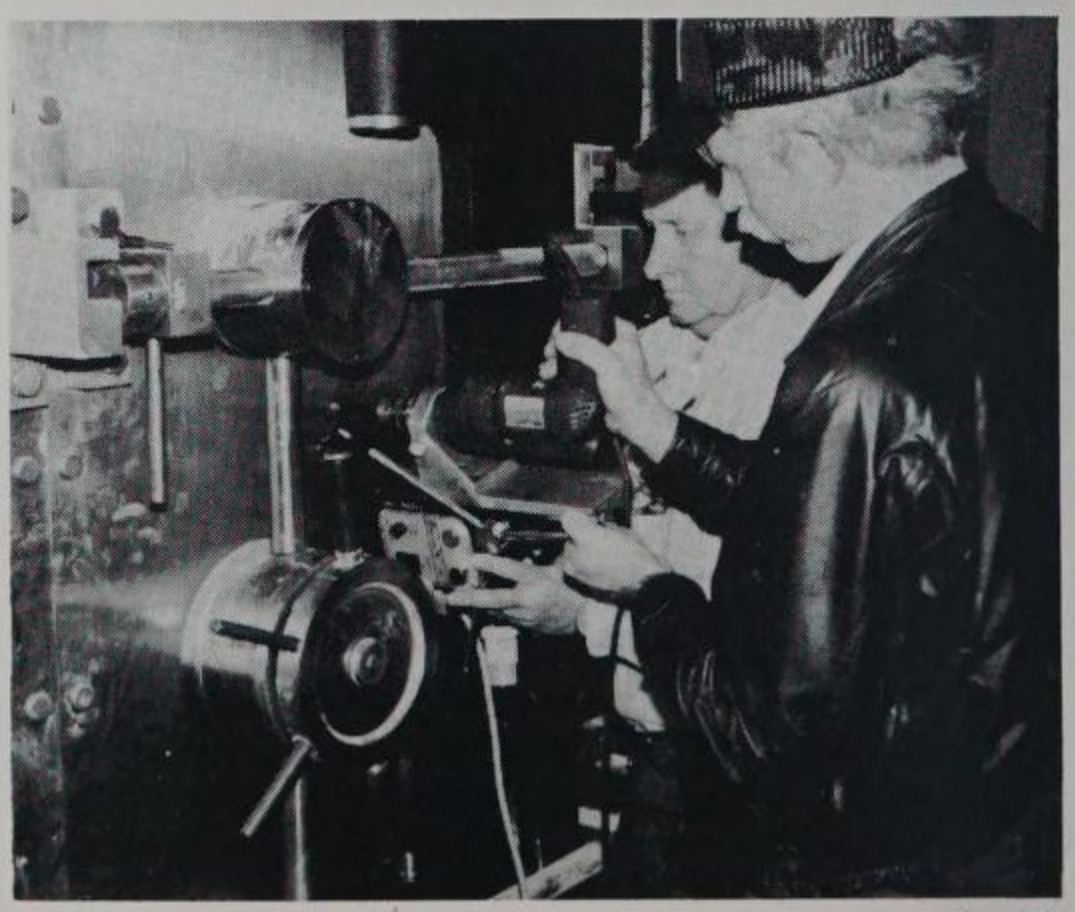
5. Dial removed from the spindle.



6. Pieces removed from the dial spindle.

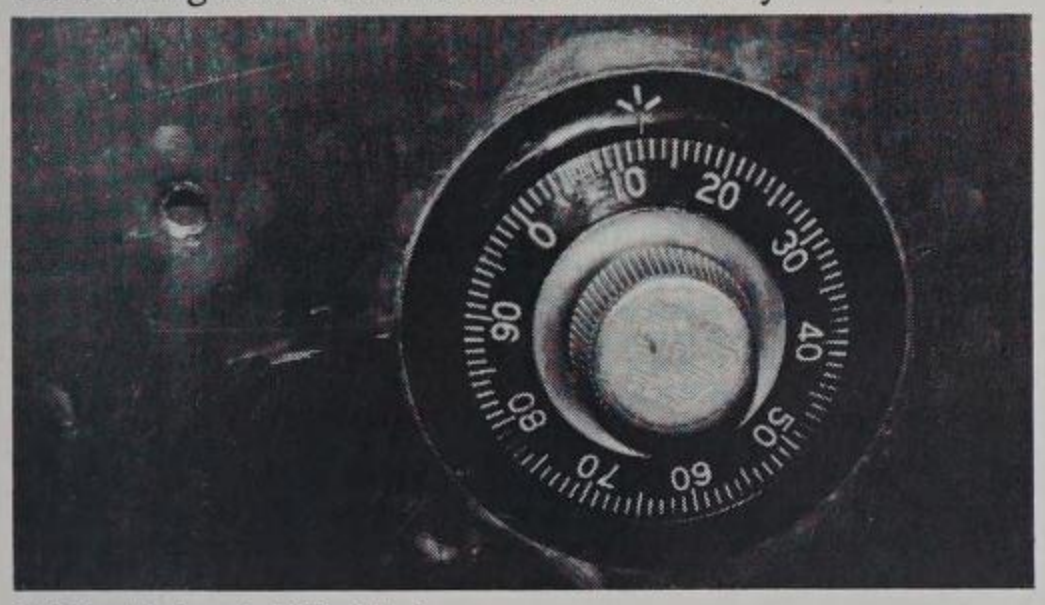
possible way, but had good reason to suspect that this one was offset due left (x-ray view).

So the drill point was marked for a borescope hole, and drilling commenced. My good friend Don Spenard from Solly's Lox and Safes in Seattle had loaned me his miniature magnetic drill press, so we decided to try it out on the vault. Photograph seven shows Richard making progress through the front of the vault door.



7. Drilling through the front using a miniature magnetic drill press.

Shortly after I snapped the last photograph, the little drill press began to slip-slide away, so I finished the hole with the aid of Black Bart. In photograph eight we have the dial and the hole. Those of you who have been reading carefully may wonder how and why the dial got put back on the spindle. Well, it was removed to give us room to fit the drill press on the door. Then I used a dial ring screw hole to attach the chain for Black Bart. Now, we were ready to insert the scope and dial for dollars. So the dial was put back on to help in transferring numbers. That's the how and why.



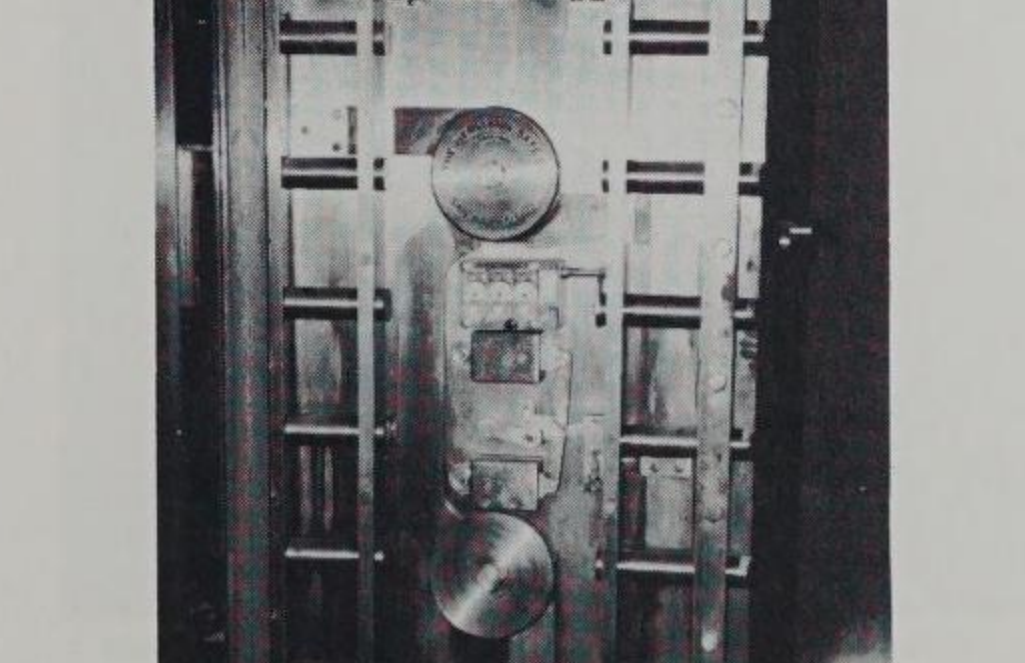
8. The dial and drilled hole.

Inserting my Olympus scope into the hole, I let out an involuntary "yeah!" The hole was absolutely perfect; the four wheels could be seen as could the fence. Umm umm good. The curvature of the wheels made it difficult to line the wheels up directly under the fence, so I took a reading and transferred the numbers with the help of the dial that we had re-installed. On the very first try, the fence dropped in and the lockbolt retracted. And since this door was set up with the second lock as a back-up (as opposed to dual-custody), the handle could now be rotated to retract the locking bolts.

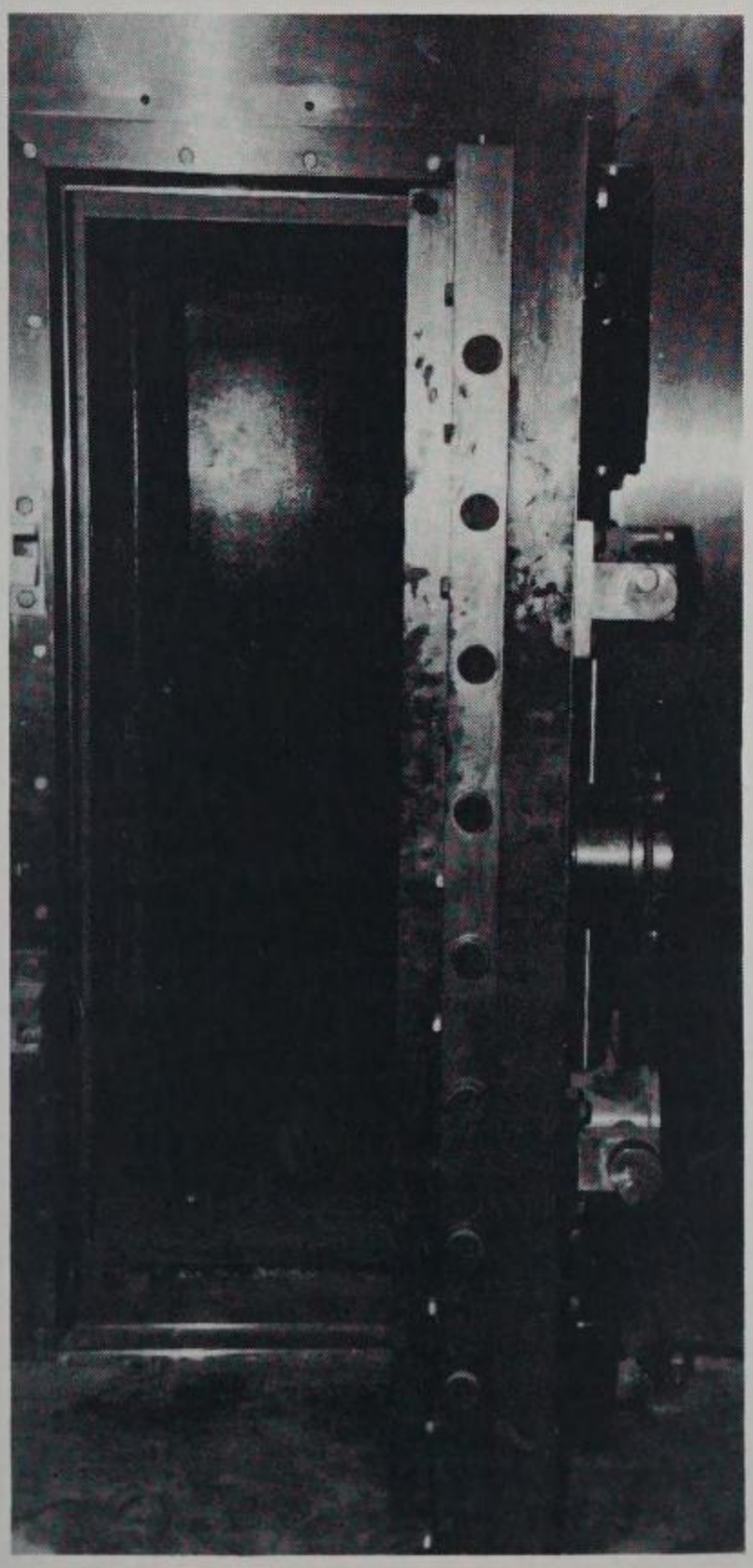
Once the handle was rotated, we cranked the captain's wheel to release the pressure system, and the vault door was open.

Photograph nine is a side-view of the door. As you can see, there are eight side-bolts.

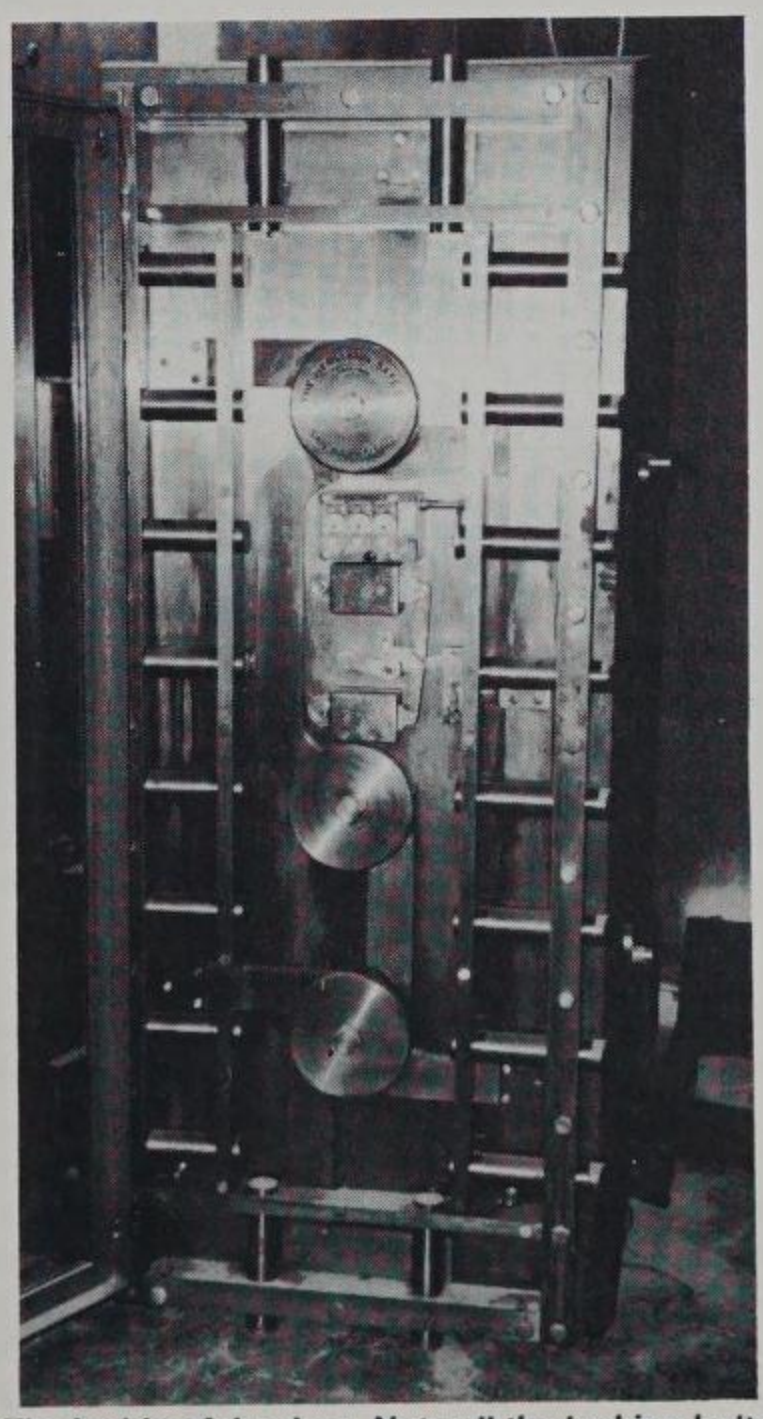
In photograph 10, a tape measure indicates the total door thickness is right at 9".



10. Tape measure indicating thickness: 9".



9. Door side-view, showing eight side- bolts.



11. The inside of the door. Note all the locking bolts.

12. Stamp revealing the manufacturer as the Herman Safe Co.

Photograph 11 shows us the inside of the door. The locks and boltwork are waiting for our inspection. Note the 4-way boltwork, with eight locking bolts on both the opening and hinge sides, and two locking bolts top and bottom.

Photograph 12 gives the manufacturer away. This is a Hermann vault door, manufactured in San Francisco. and with that, I bid you all good day. Next month we will see what makes a Hermann Hermit, I mean tick. See ya then.§

Herman Bank Vault

"Aren't bank vaults hard to drill? For Joe, the True Value key cutter, it will probably be excruciating. For the experienced safeman it's not that bad."

by Dave McOmie

Before we continue our examination of the Herman bank vault, I should pre-emptively answer a few questions that are bound to be asked:

Isn't there a law against drilling bank vaults? Not that I am aware of. I haven't read the (toothless) Bank Protection Act recently, but I recall nothing in it pertaining to the drilling of vaults. Companies like Diebold and Mosler have internal policies prohibiting their service technicians from drilling bank vaults, picking keylocks and manipulating combination locks, but thank goodness these antiquated policies that predate Tyrannosaurus Rex are not binding on the rest of us who strive for excellence. In a nutshell, there is absolutely nothing wrong with drilling a bank vault unless you do it in the middle of the night under the glare of a flashlight.

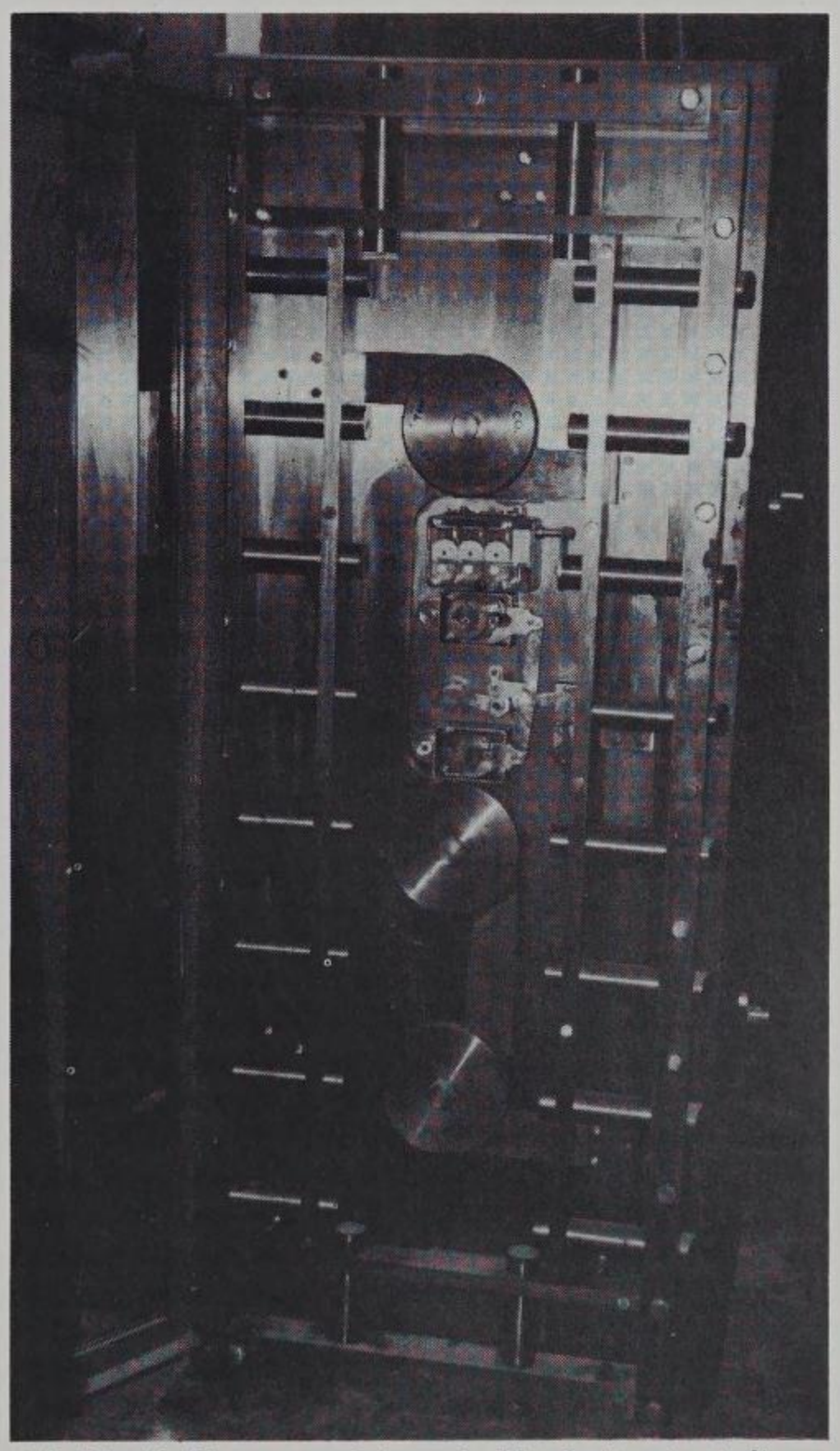
Aren't bank vaults hard to drill? Well that depends on who is doing the drilling. For Joe the True Value keycutter, it will probably be excruciatingly difficult. For the experienced locksmith/safeman it is not all that bad, at least in general. Between the dozen or so safemen that I chat with every so often, only two of them have reported hitting any real tough stuff in bank doors. Interestingly the vaults that were commented on were both 1960's vintage Diebolds.

Doesn't drilling affect the security of a vault? Yes, it does. Properly repaired, security can be *enhanced;* just make sure your repair is going to be very difficult to drill through. In fact, make it so darned difficult that the next guy will give up and go elsewhere. Another possibility is to remove the stainless steel fascia plate before you begin. My friend Dave Richardson from Los Angeles has done this several times with very good results. After making the repair (and Dave does a real he-man repair), he reinstalls the stainless steel plate and everything is invisible. One other possibility is to drill the hole under the dial ring, which also renders the repair invisible. More on that possibility later.

Anyone out there with more data to add, please contact me in care of *The National Locksmith*. Now let's get back to the Herman.

In photograph one we have the inside of the vault door with the locking bolts retracted. There are plenty of large locking bolts on that door.

In photograph two we have zoomed in for a close-up of the locks and timelock. The locks, with the back covers still attached, are old-style, indirect-drive S&G 6555 E series

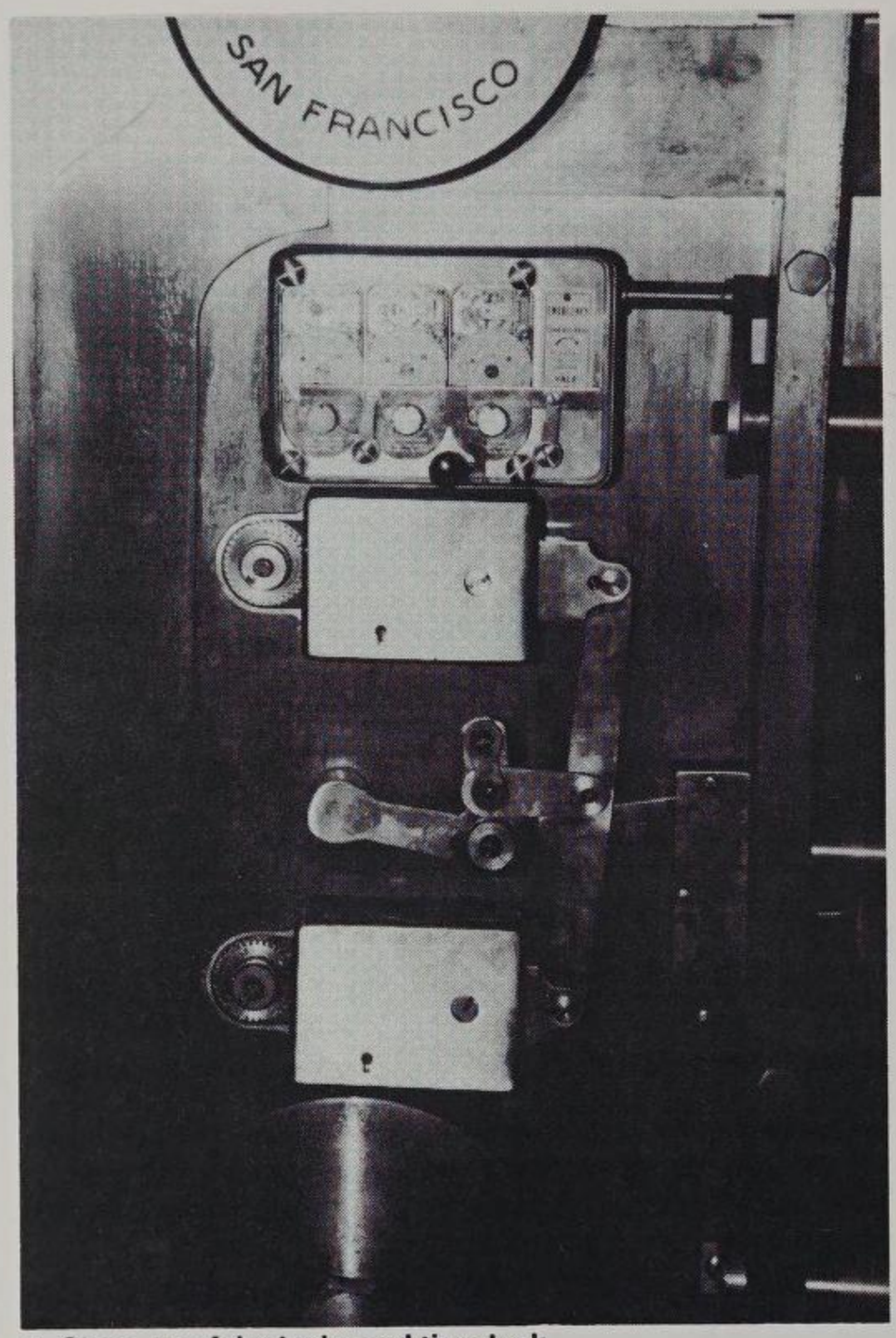


1. Inside of a Herman vault door; locking bolts retracted/

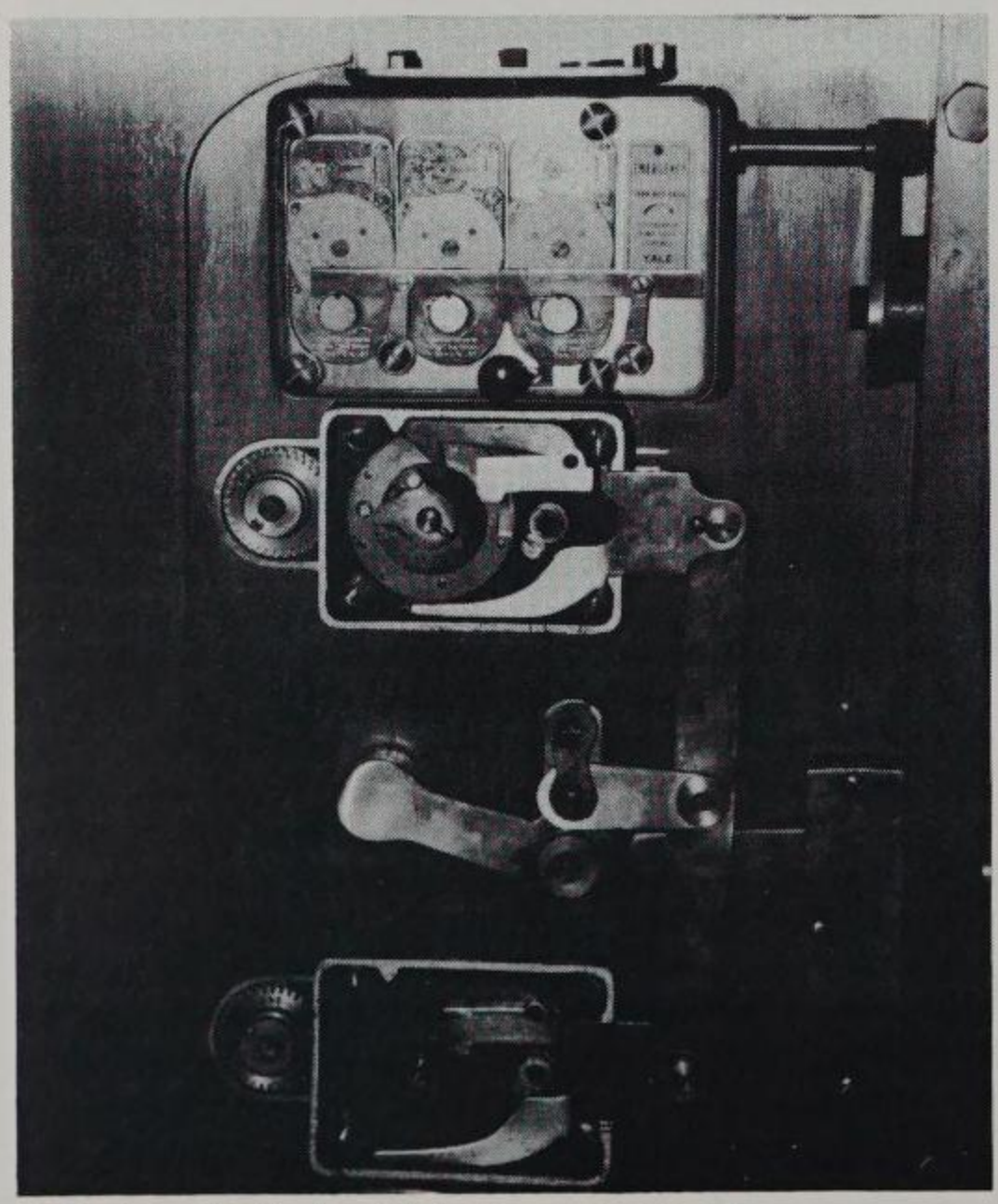
vault locks mounted right-hand. The timelock, which, to my good fortune had wound down on schedule, is a 3-movement Yale.

In photograph three the back covers of the combination locks have been removed. The top lock is in the locked position; the bottom lock is in the unlocked position.

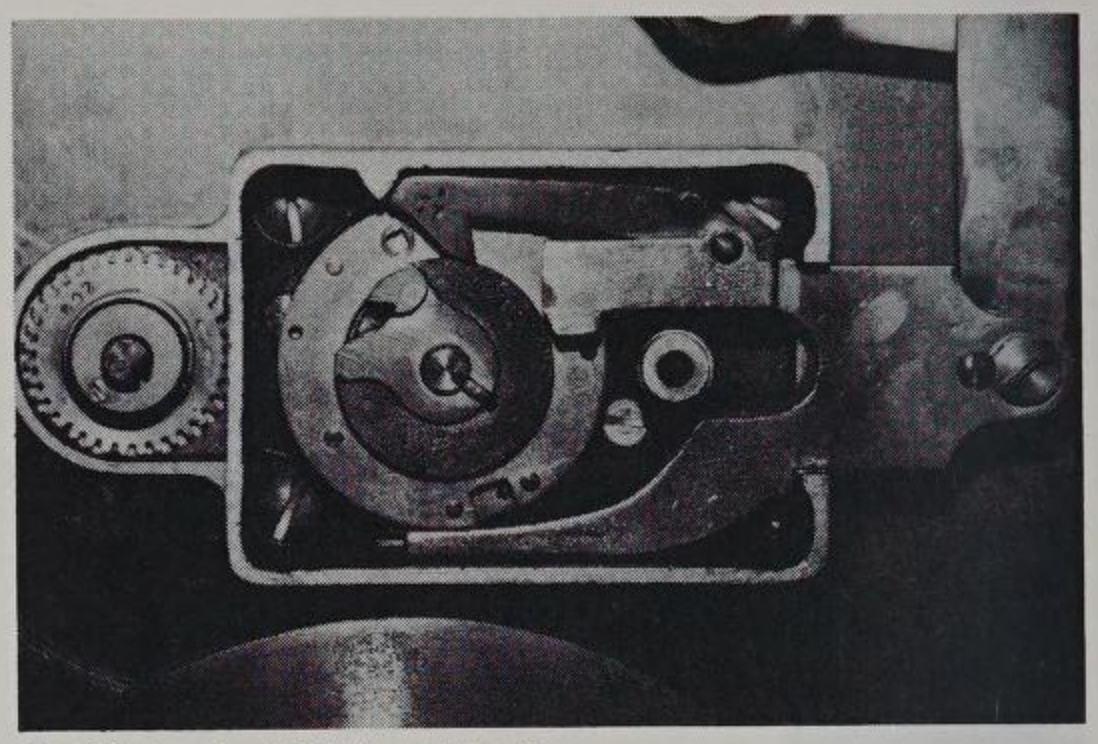
In photograph four we see the S&G vault lock that was the standard of the industry until its modern counterpart succeeded and superseded it. Although there are quite a few differences between old-style and new style, it would be



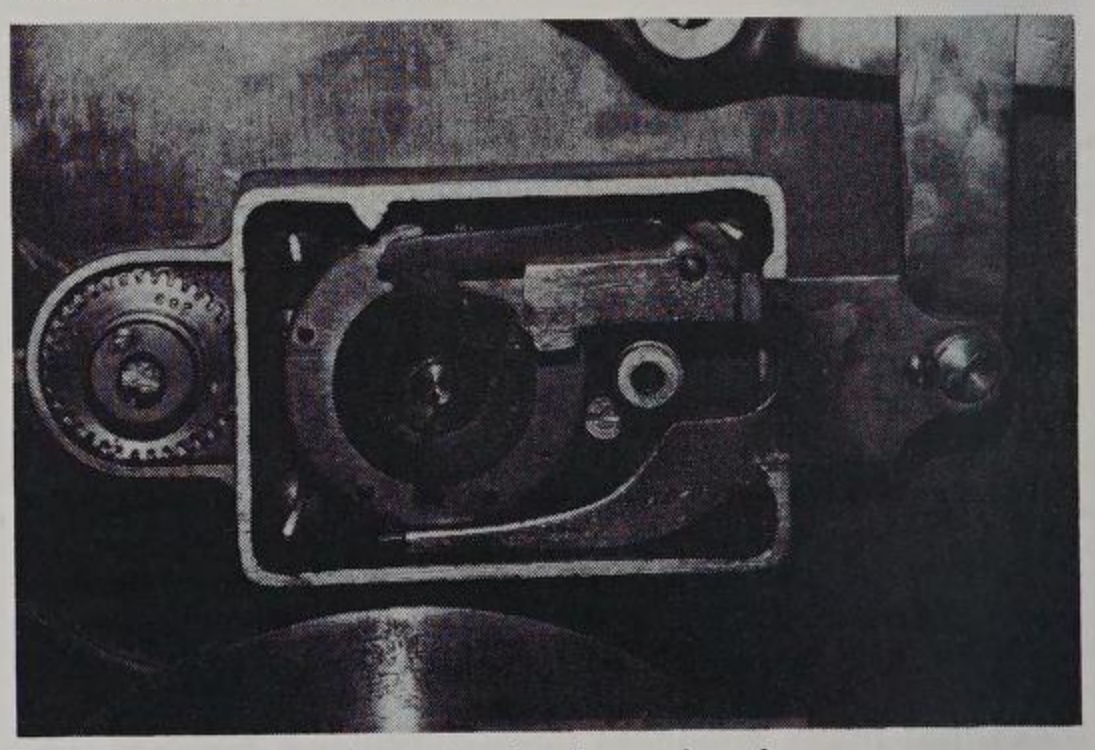
2. Close-up of the locks and time lock.



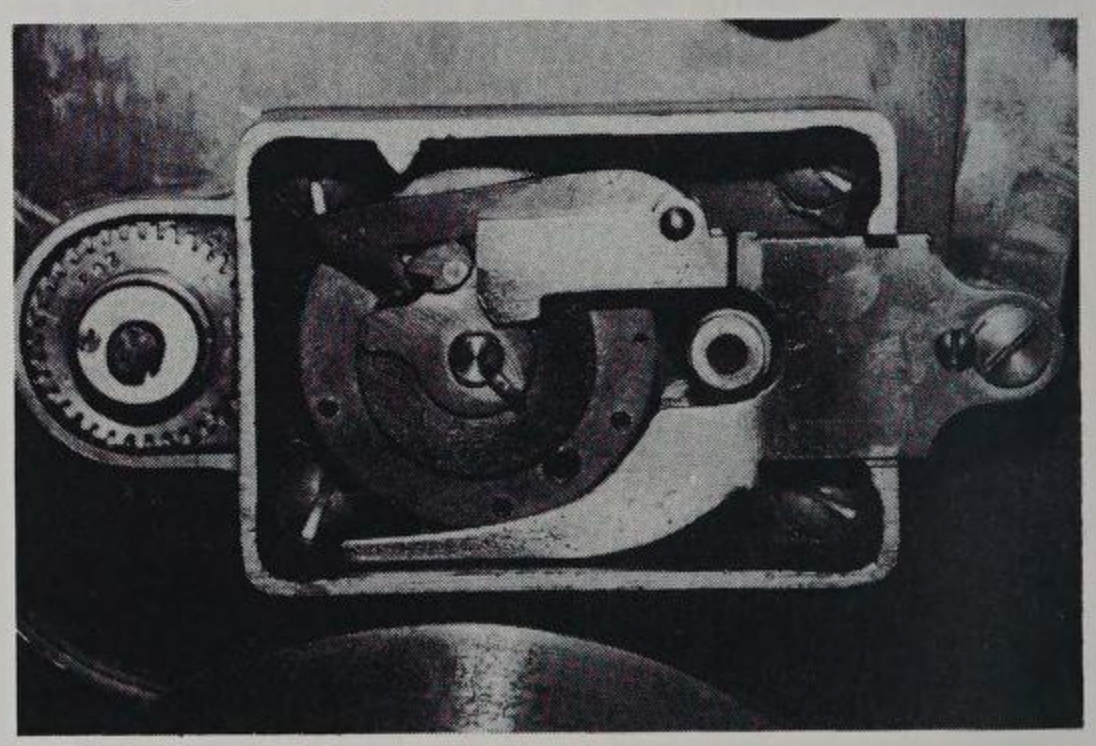
3. Combination locks with bacl cover removed.



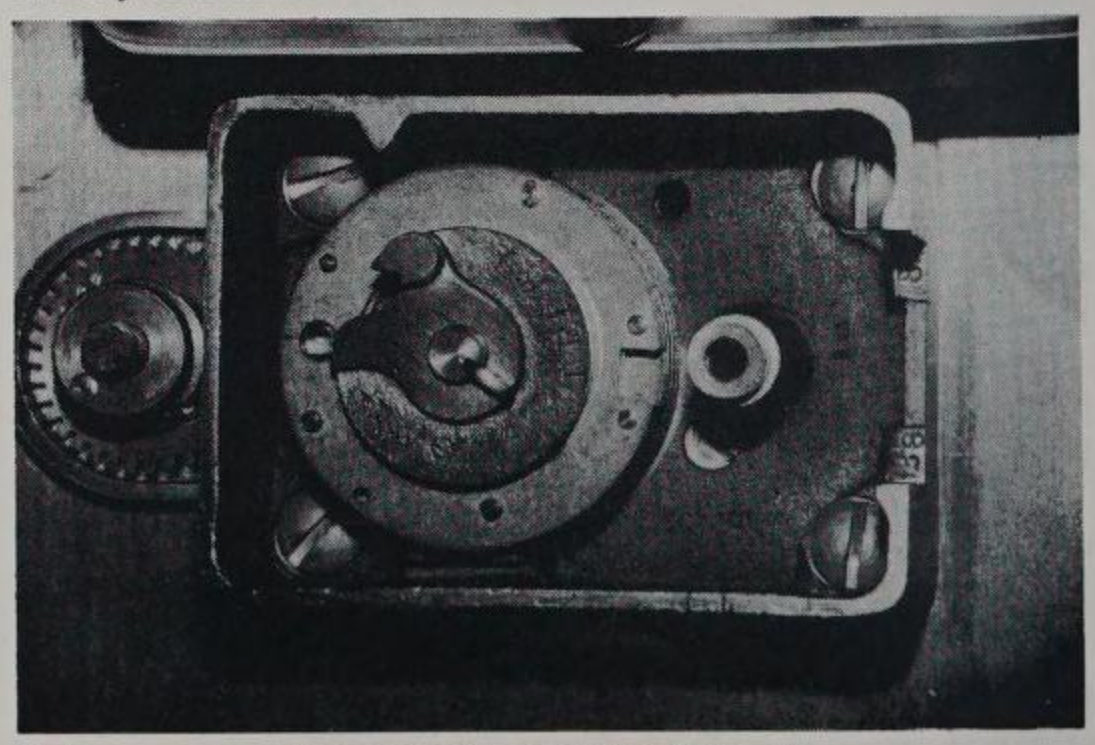
4. Old standard S&G vault lock.



5. Wheel gates lined up allowing fence drop-in.



6. Fully unlocked lock.



7. Lever assembly removed, exposing drill hole.

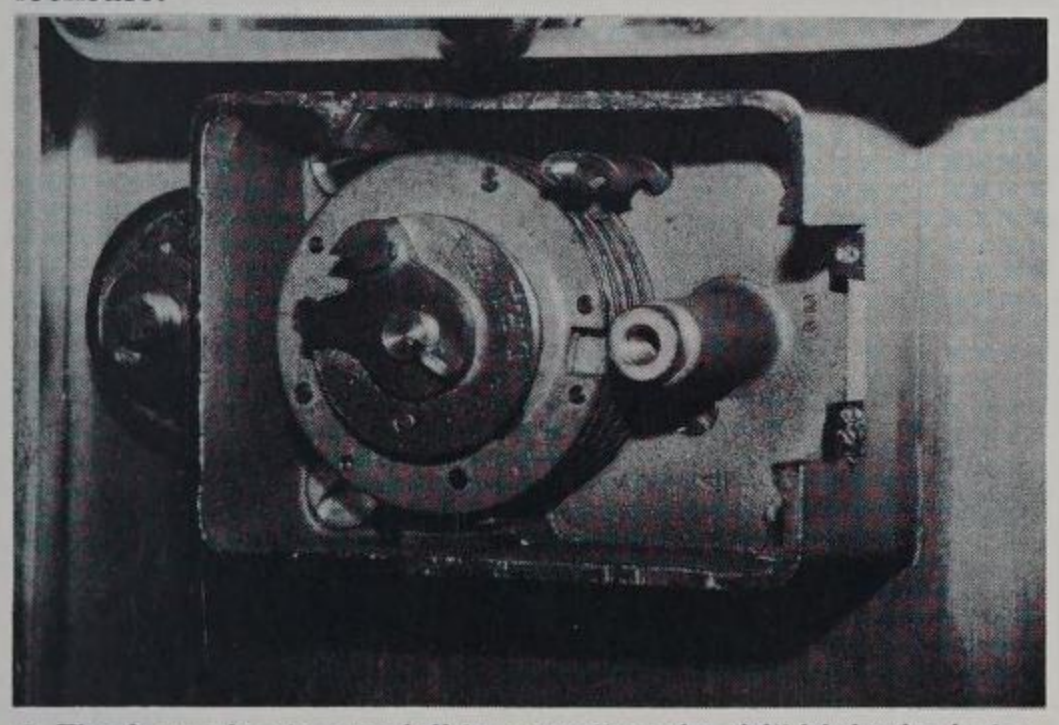
difficult for me to argue one over the other (though I will cofess a fondness for the old-style vault lock). Both are extremely well built, and problems with either lock were and are few and far between. Notice the lock is indirect drive: the center of the wheel pack is 2-5/16" to the right of dial spindle. It is this offset that must be compensated for when you are deducing a drill point. If you were to drill without compensating for the offset, your hole would come through just above the gear that the spindle goes through. Gads, that would be an air hole!

In photograph five the wheel gates have been lined up under the fence, allowing the fence to drop in. Notice that the driver in this lock is rear mounted, whereas the driver in a modern 6500 is front mounted.

In photograph six the lock is in the fully unlocked position. In this position the handle on the outside of the vault can be rotated, which will retract the boltwork.

Photograph seven is a trophy picture. With the lever assembly removed, we can see the tiny little 1/4" hole that opened the bank vault. In all immodesty, the placement of that hole is precision perfect.

Photograph eight was taken at a slight angle, allowing us to see all four wheels. A drill bit is sticking through the drilled hole. As you can see, the bit penetrated the lock in the open spot midway between the wheels and the top of the lockcase.



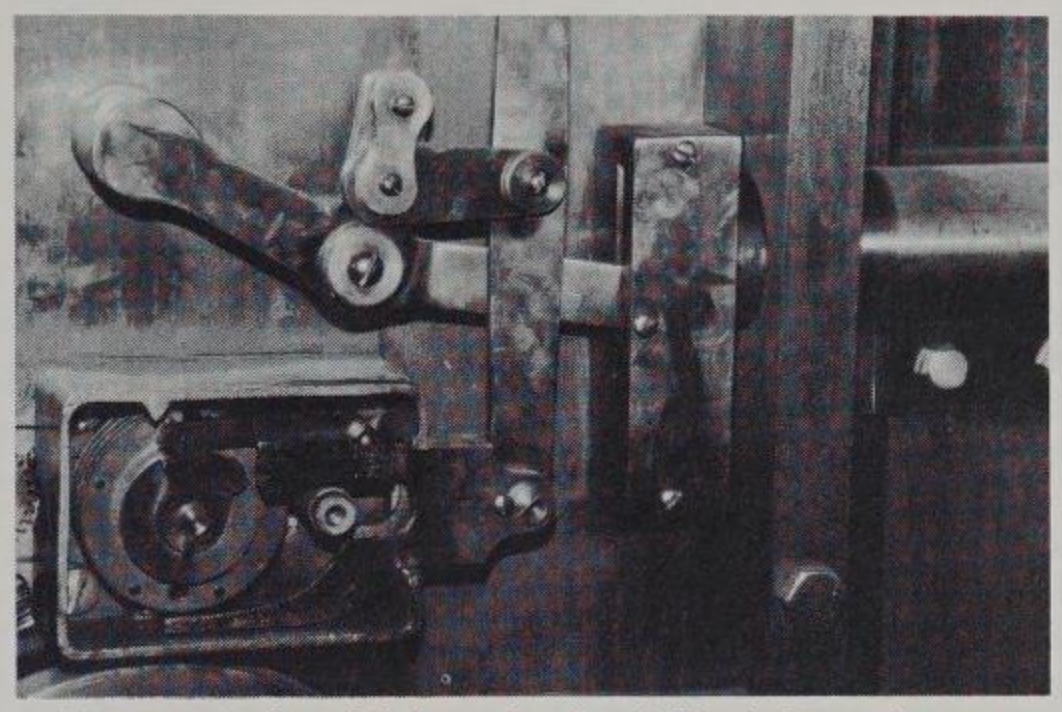
8. The four wheels are visible as well as the drill bit in the hole.

Earlier I mentioned the possibility of drilling under the dial ring to make the repair invisible. You will remember from last month that the hole I drilled was way outside the dial ring, and since I did not remove the stainless steel plate, it will be a little difficult to make an invisible repair.

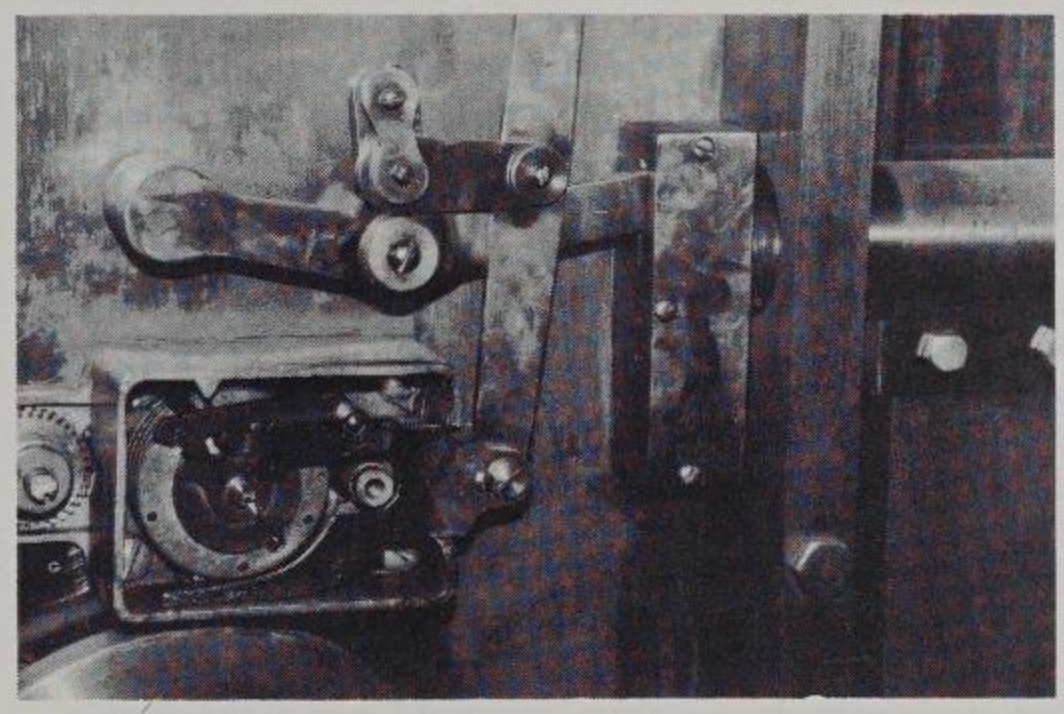
So hypothetically, what about the possibility of drilling under the dial ring? Well, it would be a little risky, but it could be done. The tricky part would be avoiding the three gears that are under the lock. Remember, this lock is indirect-drive, and the indirectness is accomplished by using gears to make the connection between the dial spindle and the wheels. Drilling into the gears and mangling them would turn a routine job into a likely nightmare. To avoid the gears requires absolute certitude about the lock on the inside.

Through the years there have been a few variations in the placement of the gears in the vault locks. But I believe you would be safe to drill near or through the lower mounting screw, which would put your hole right at the edge of where the dial ring was (before you removed it) at about 63 on the dial. Remember, this assumes an indirect drive 6500 mounted right hand.

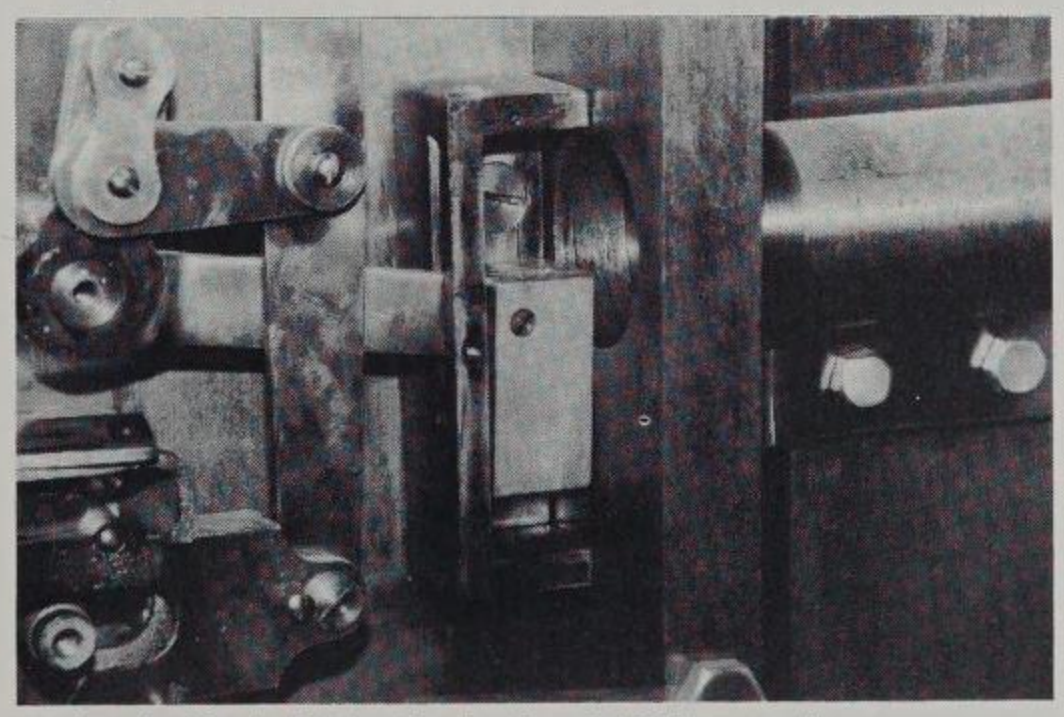
This should provide you with a good scope hole and a



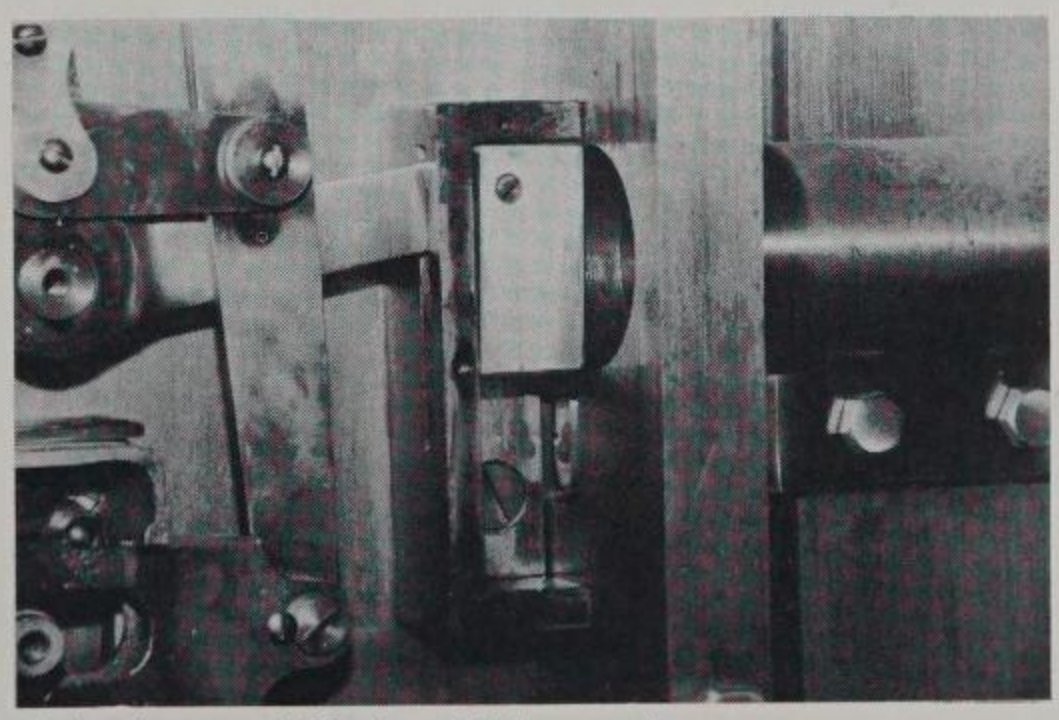
9. The lower lock and linkage that "really" lock the vault.



10. Opened lock.



11. Locked lock. Notice the horizontal linkage rod.



12. Lock opened. Block and linkage radar up.

very easy repair. I think I'll try that next time and see if I can place that hole as perfectly as this one. This time it didn't matter all that much because Rich said he would take care of doing the repair (what a guy!).

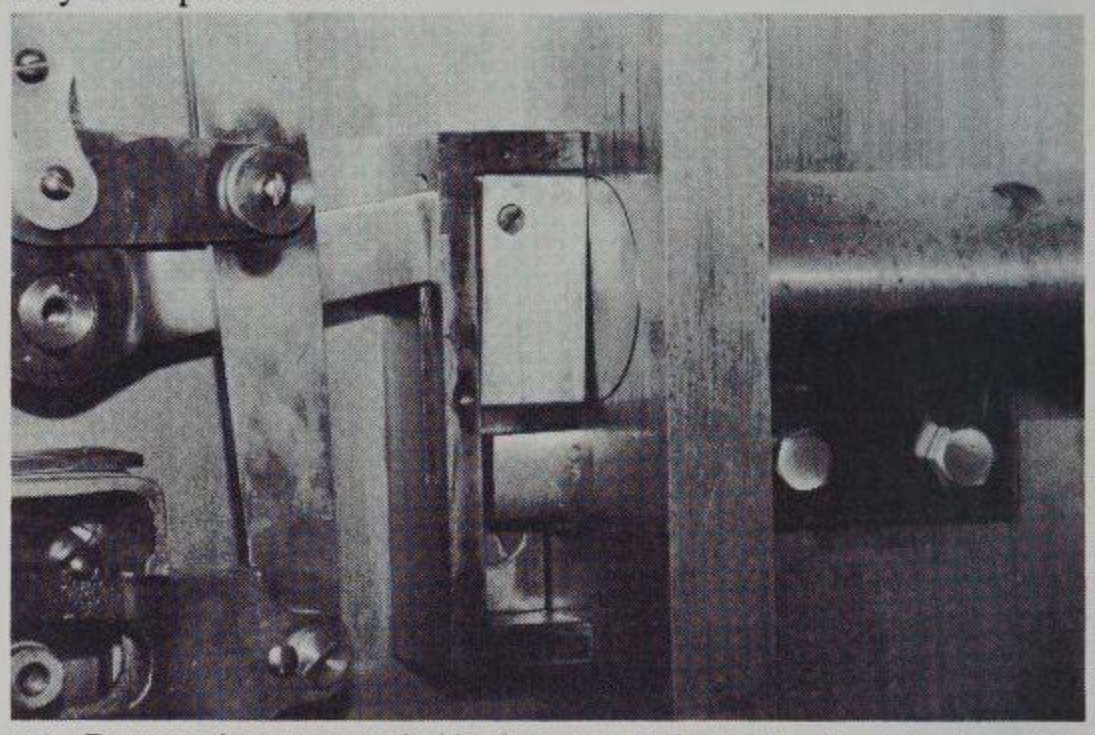
Now that we have examined the locks in detail, let's take a look at what actually locks the vault. In photograph nine we see the lower lock and the linkage to its right. The horizontal linkage rod is going into that rectangular block to the right, but what is it doing? The answer in a moment. In this photograph, the linkage is in the locked position.

In photograph 10, the lock has been opened, causing the horizontal linkage rod to raise up in the rectangular block. In this position the boltwork can be retracted. Although we can't see it in this photo, inside that rectangular block is a smaller rectangular block that is controlled by the horizontal linkage rod. Let's remove the cover plate so we can see what is going on in there.

In photograph 11 we have locked the locks and removed the cover plate over the rectangular block. Notice that the horizontal linkage rod is in the lower position. This is the locked position: the boltwork cannot be retracted.

In photograph 12 the lock has been opened, and the horizontal linkage rod and the smaller rectangular block that it controls, have traveled upwards about an inch. In this position the locks and linkage are in the unlocked position, the boltwork may now be retracted. *Note: I should point out that the round locking bolt and its guide hole have absolutely nothing to do with the blocking action we are discussing. The fact that the locking bolt is in the vicinity of the rectangular block is merely incidental. Do not let it confuse you.*

In photograph 13 the boltwork has been retracted. Look carefully: notice the small bar that slid in underneath the small block that was lifted by the horizontal linkage rod. This small bar and the small block that blocks it are what keep this door physically locked. When the horizontal linkage rod lifts the small block up and out of the way, the small bar can then pass through and the boltwork can be retracted. Pretty amazing isn't it? This great big door is held locked by that tiny little piece of steel!



13. Boltwork retracted. Notice small bar blocks what really locks door.

All in all, bank vaults are fun to do. And with the collapse of so many savings and loan institutions, you shouldn't be at all surprised if you start getting calls to open a few bank vaults. As private businesses begin using buildings formerly occupied by S&L's, a few locked vaults are bound to be discovered. By way of reminder, if any of you get in a bind and need my service on a bank vault or high-security safe opening, I am as close as your nearest airport. Have drill will still travel...first class with a window seat, of course! §

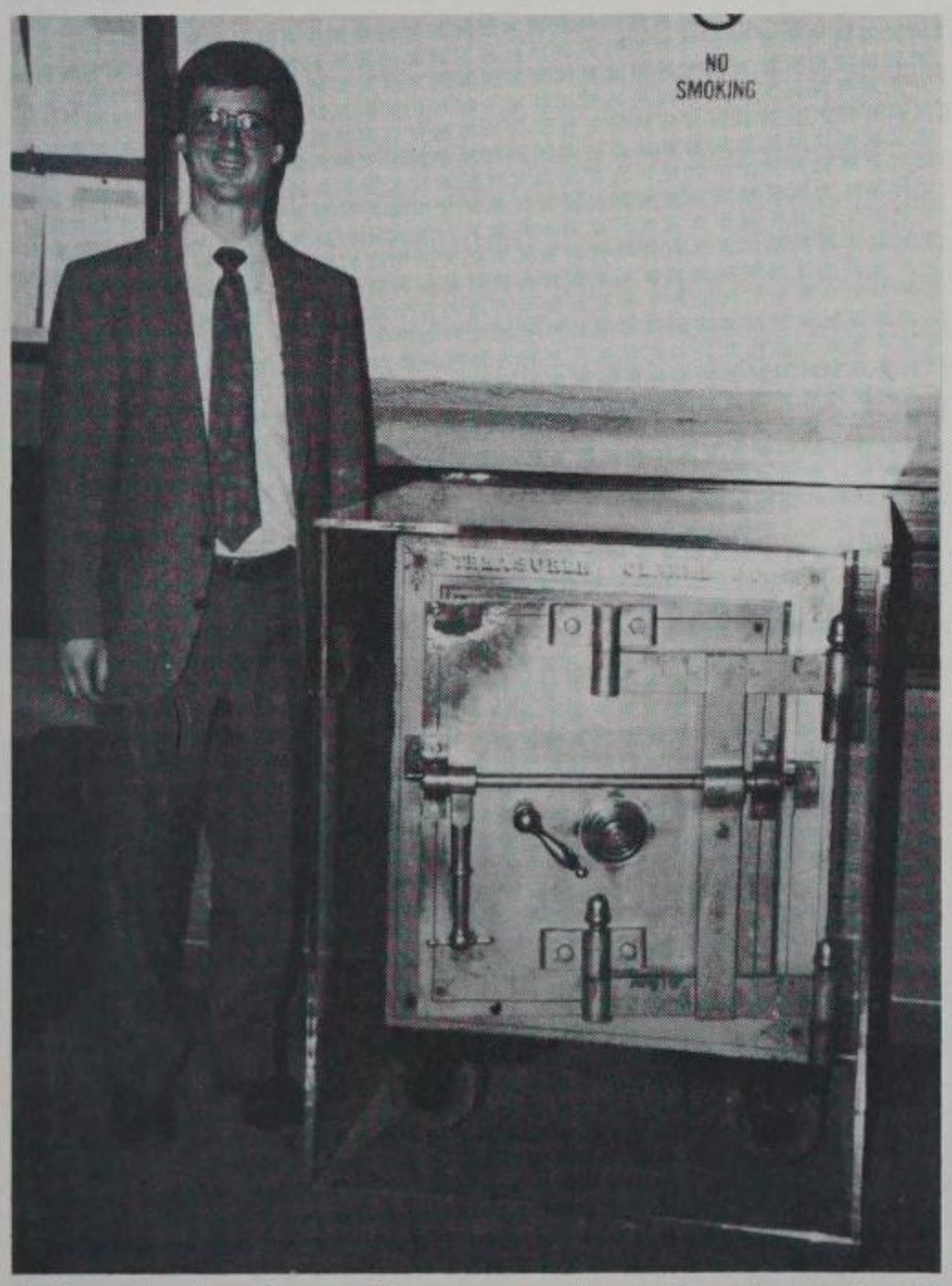
MacNeale & Urban Safe

"I walked through the doors of the County Treasurer's office to pay my property taxes when I saw the two antique Banker's safes protected by plexiglass."

by Dave McOmie

It is easy to take the old hometown for granted. After all, it seems like all the fun stuff always happens in someone else's hometown, right? Well, perhaps we need to remind ourselves that things aren't always as them seem, that the grass in each of our hometowns can be as green as we want it to be.

I was given just such a reminder recently, as I walked through the lobby doors into the Clark County Treasurer's office to pay my (outrageously high) property taxes. On public display in the lobby were two antique Banker's Safes, each one protected by a Plexiglass shield. I was stunned. After paying my taxes, I introduced myself and inquired as to the possibility of having the Plexiglass shields removed so I could examine the safes.



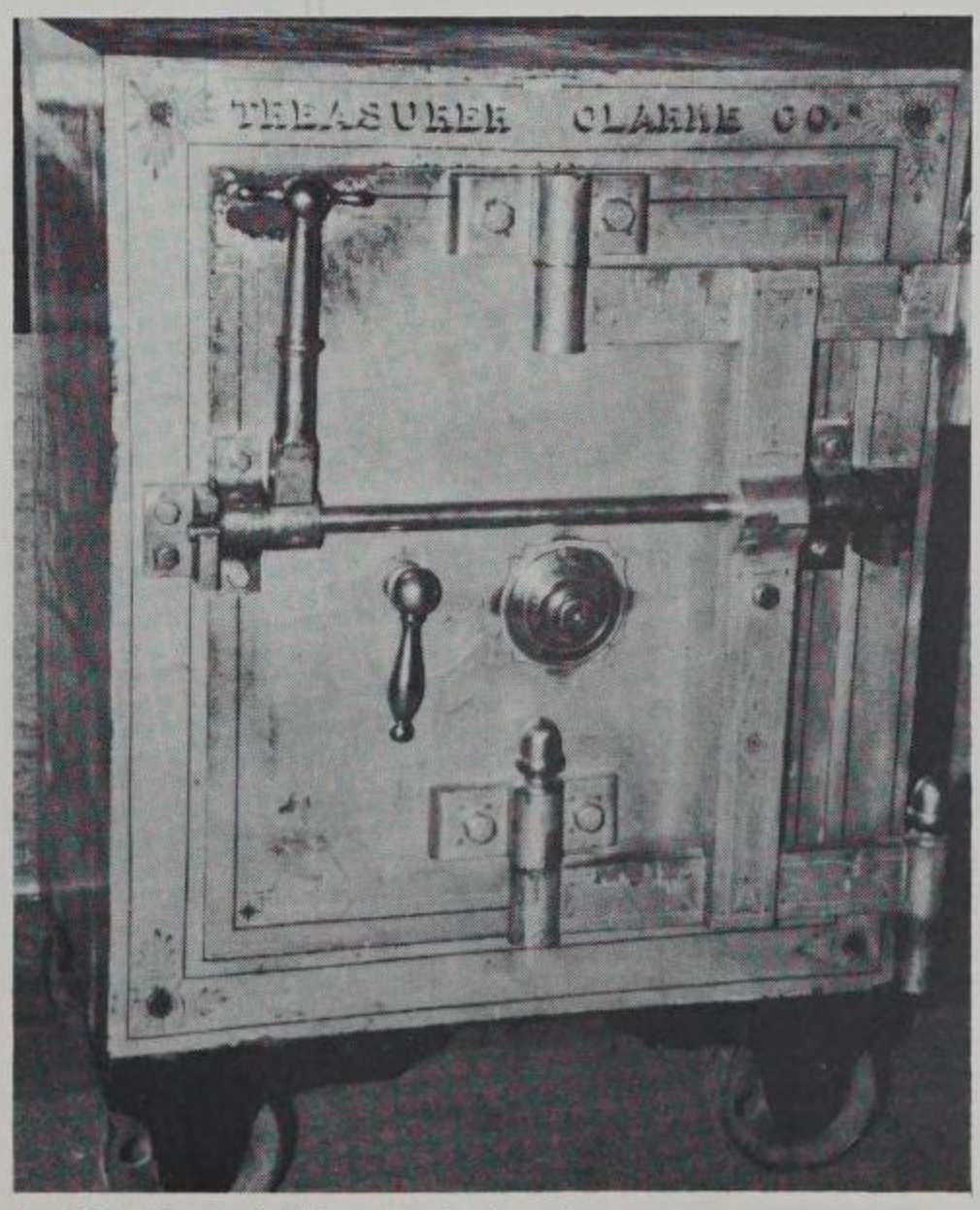
1. Doug Lasher, County Treasurer and an antique banker's safe.

Doug Lasher, our esteemed and cooperative County Treasurer, not only granted permission, but offered to help lift off the heavy shields. In photograph one Doug is smiling for the camera, just seconds before rolling up his sleeves and groaning along with me as we strained to lift off the shields. Gee whiz, I didn't know Plexiglass was so heavy!

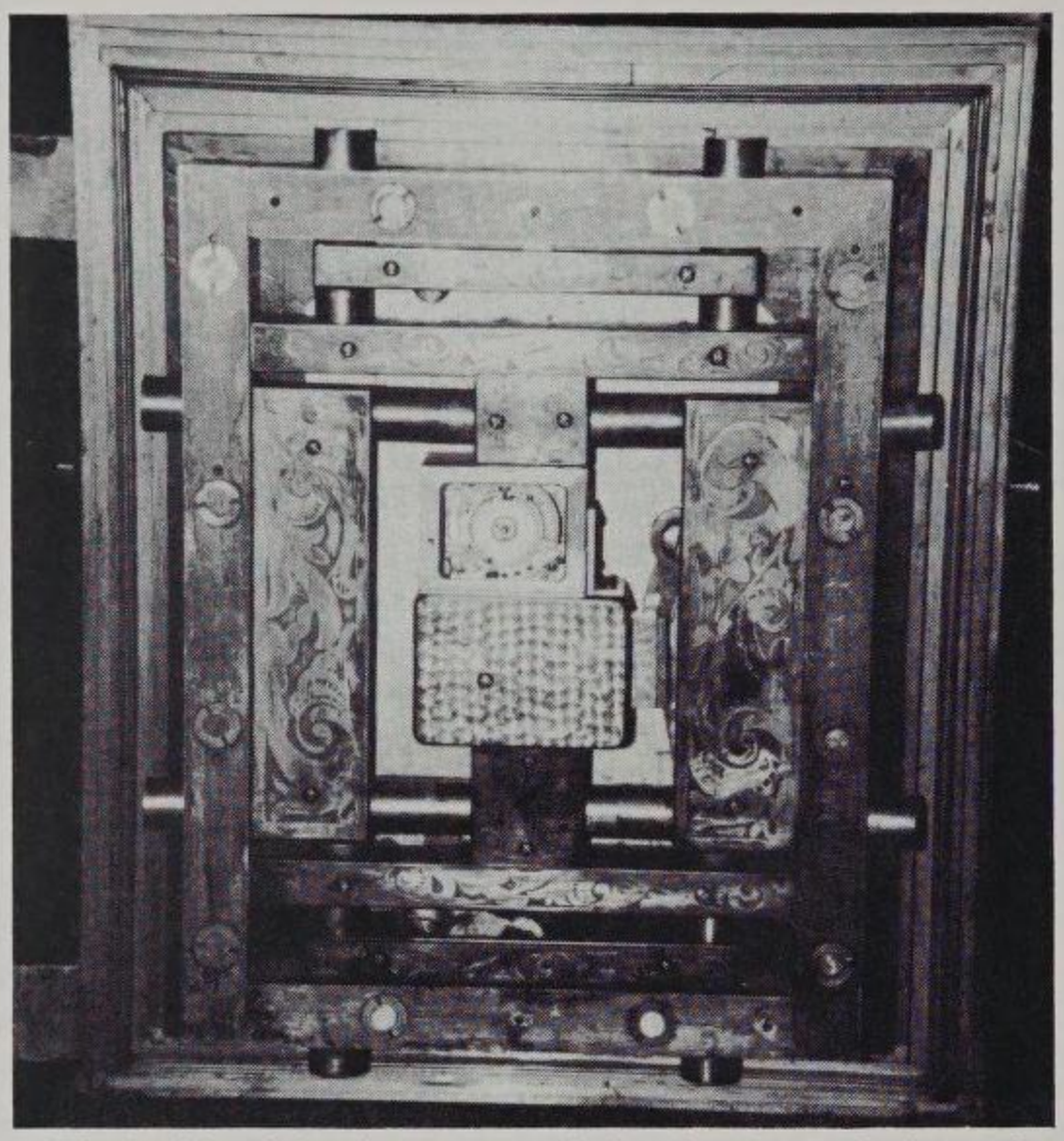
With the shields out of the way, and with Doug rolling his shirt sleeves back down, I snapped photograph two, which gives us a close-up of a MacNeale & Urban Banker's safe. The letters on the dial, and the distinctive handle are definite tip-offs as to the manufacturer. Along the top of the body, it says "Treasurer Clarke Co." I asked about the spelling of "Clark" and Doug informed me that the historical research on this point is quite clear. MacNeale & Urban blew it, pure and simple. they misspelled the word; the "E" on the end was a mistake. Oh well, that is nothing new. I told Doug that lots of safe companies a lot less significant and successful than MacNeale & Urban still screw up a simple everyday word like "McOmie."

Photograph three shows us the lock, timelock, and boltwork on the inside of the door. The locking bolts are in the extended position.

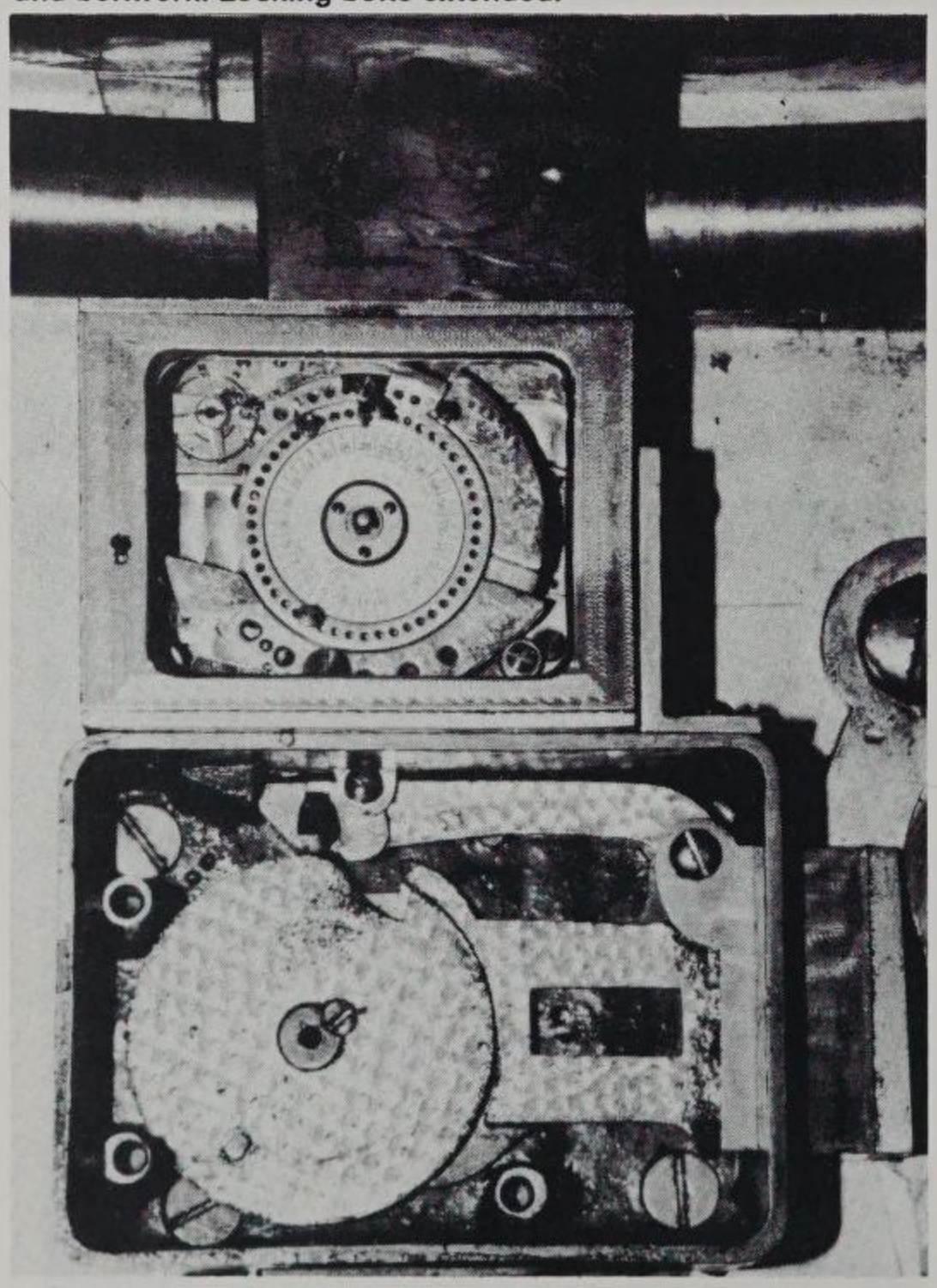
In photograph four we have a close-up of the M&U combination lock and the Dalton timelock. If you look closely,



2. A MacNeale & Urban banker's safe.



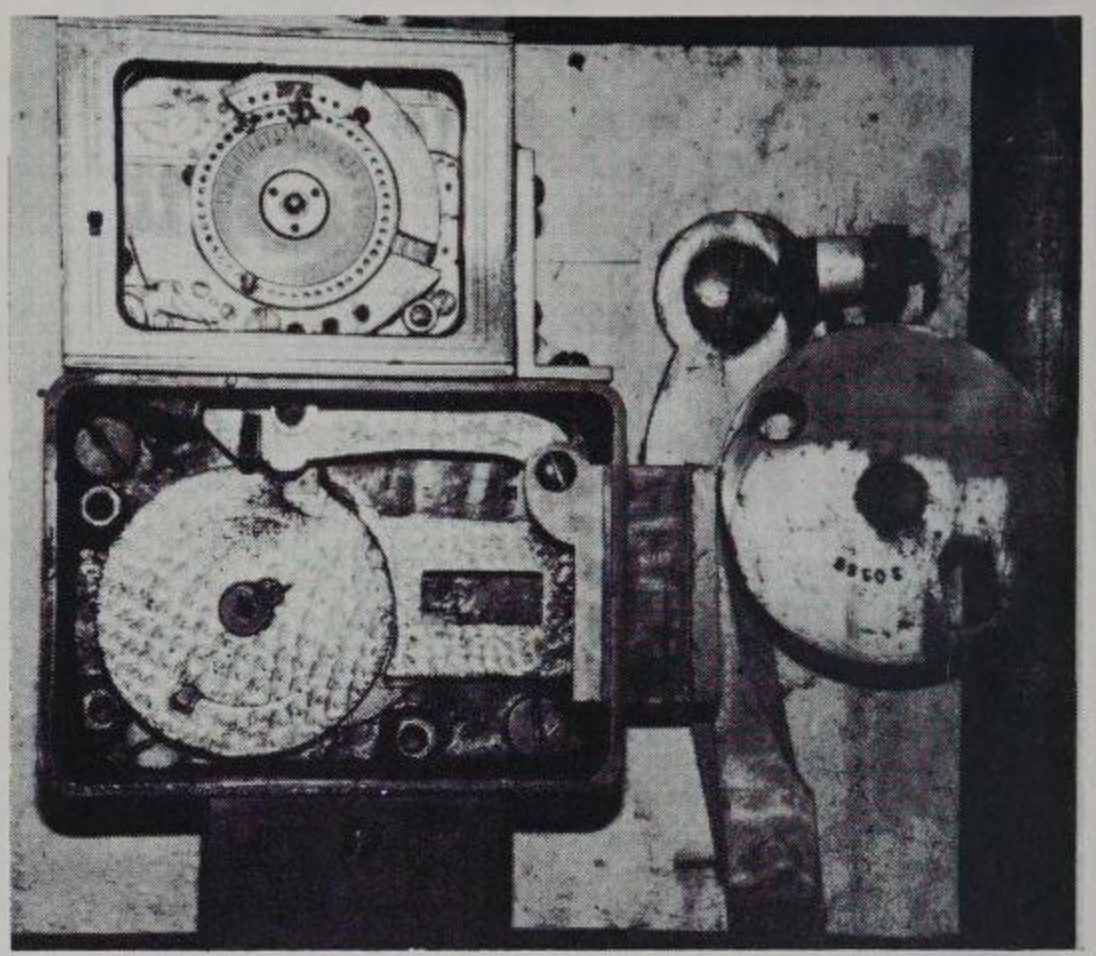
3. The inside of the door exposed showing the lock, timelock, and boltwork. Locking bolts extended.



4. The M&U combination lock and the Dalton timelock.

you can see the little arm extending from the timelock down into the combination lock next to the lever. When time is wound on the timelock, the little arm hooks the fence and will not permit it to drop into the wheel gates until time has wound down.

In photograph five, one of the bolt carrying bars has been removed, allowing us to see the handle cam to the right of the combination lock. This is interesting. The handle is free-spinning



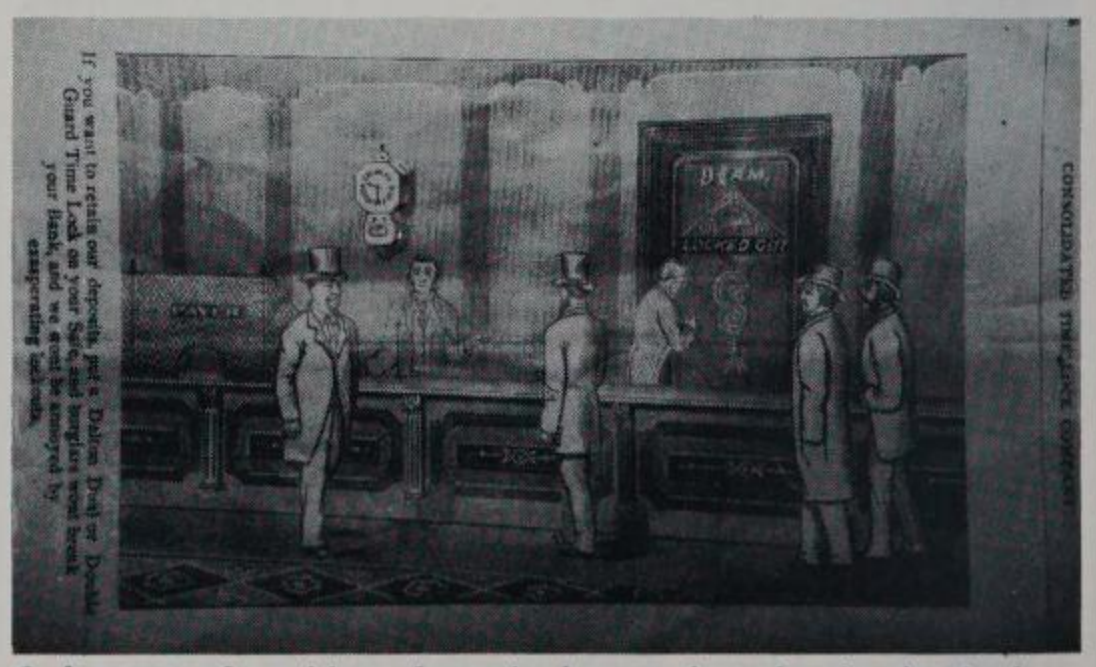
5. In this photo a bolt carrying bar has been removed so your can see the handle cam to the right of the combination lock.

when the lock is locked. After the combination is properly dialed, you can retract the lockbolt on the final turn to the right (the stop position on this lock is Y). As the lockbolt is retracted, the handle cam moves inward (toward the bedplate) and a pin on the end of the handle arbor engages into a hole in the handle cam. The handle cam, which is normally connected to the bolt carrying bar that was removed for this photo, can now retract the 4-way boltwork.

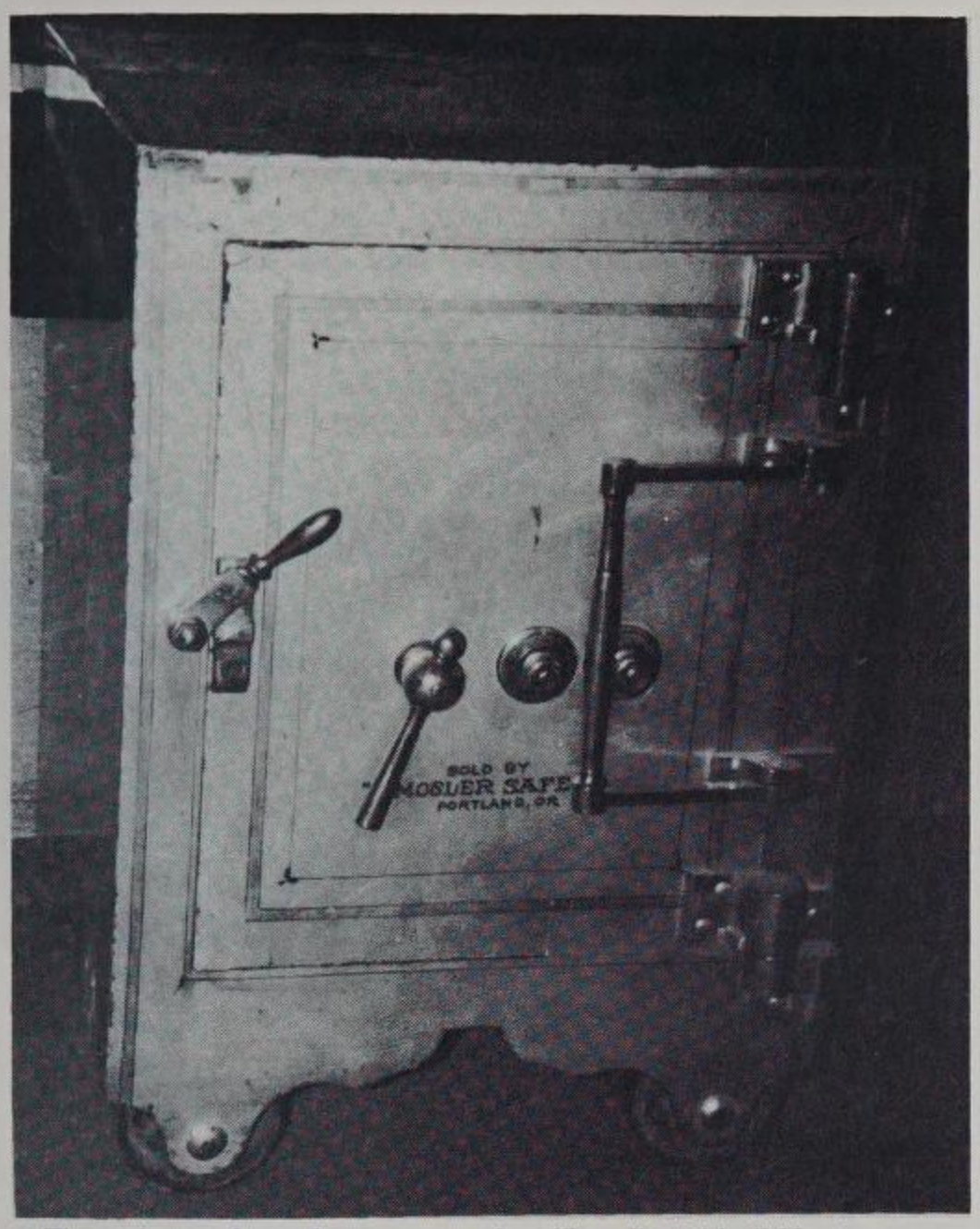
As I was finishing up my examination of the MacNeale & Urban, Doug came out holding a few papers and asked if they were worth mentioning. I couldn't believe it. He had all the original paperwork, including the sales receipt dated March 11, 1884; the operating instructions for the Dalton timelock; and the directions for operating the MacNeale & Urban "Perfection Lock" No. 3.

These documents answered several questions I have had for a long time. The sales receipt clearly shows Raymond & Wilshire in San Francisco, and they must have sold a googolplex of MacNeale & Urban safes, because many of the M&U's that I have photographed have either "Raymond & Wilshire" or "Wilshire Safe & Scale" emblazoned somewhere on the body or door.

The operating instructions make Dalton out as a subsidiary of the Consolidated Timelock Co. And the general instructions for the safe imply that Cincinnati Safe & Lock was somehow connected with MacNeale & Urban in something other than a manufacturing capacity. What the precise connection was I cannot document, But I suspect that MacNeale & Urban owned



6. A scene of a robbery from the instructions for the timelock.



7.The other safe at the treasurer's office, "sold by" Mosler.

Cincinnati Safe & Lock.

In the booklet containing the instructions for the Dalton Timelock, there are a couple of photos from the era, one of which is shown in photograph six. This depicts a robbery in progress. Notice the stove pipe hats and GQ attire. Robbers at least looked respectable back then. In this photo it is difficult to tell who is who. It is obvious that the man in the middle is a robber, but exactly who are his assistants? I have not been able to answer that important question to my satisfaction. Perhaps you can.

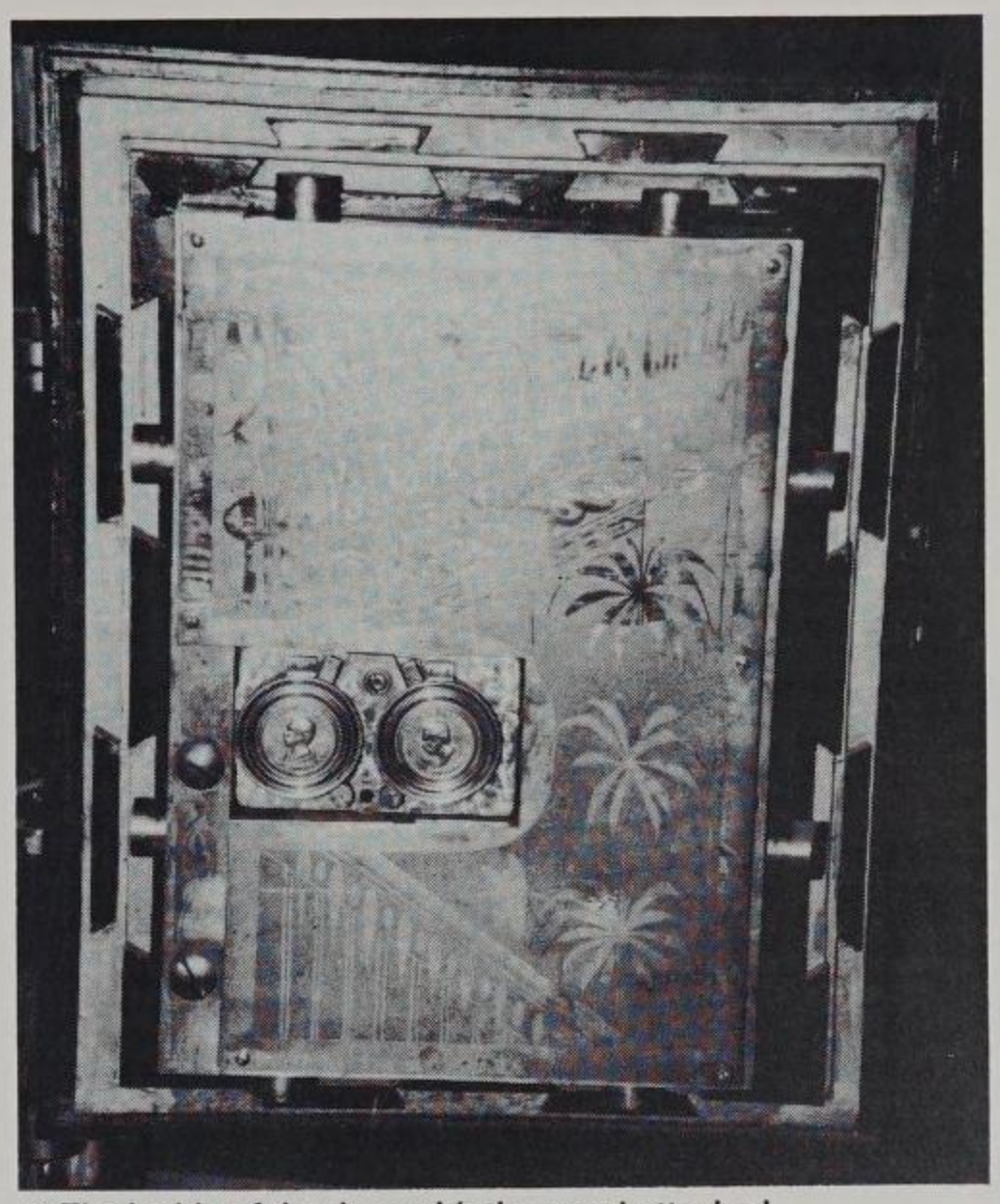
Let's look at the other Banker's safe. Who made it? Photograph seven might fool you. Since it says "Mosler" on the outside, it seems reasonable to assume that Mosler manufactured this safe. Well, once again we have to remember that things aren't always as they seem. Reading the fine print, we can see that it actually says "Sold by The Mosler Safe Co., Portland, Or." That in itself is a shock. Mosler was a dealer for other manufacturers? Huh? You must be kidding!

True enough. I knew as soon as I saw the big handle and the pressure bar that this was a Hall's, not a Mosler. Notice there are two dials on the outside. If you are an antique nut like me, your adrenalin is probably already flowing, because the double-dial Joseph L. Hall lock is one of the slickest combination locks ever made.

Photograph eight shows the inside of the door with the back panel still attached. Scrolled into the back is "Hall's Safe & Lock Co., Cincinnati, OH. The only thing they left out was a zip code! Through the cutout in the back panel we can see the combination lock.

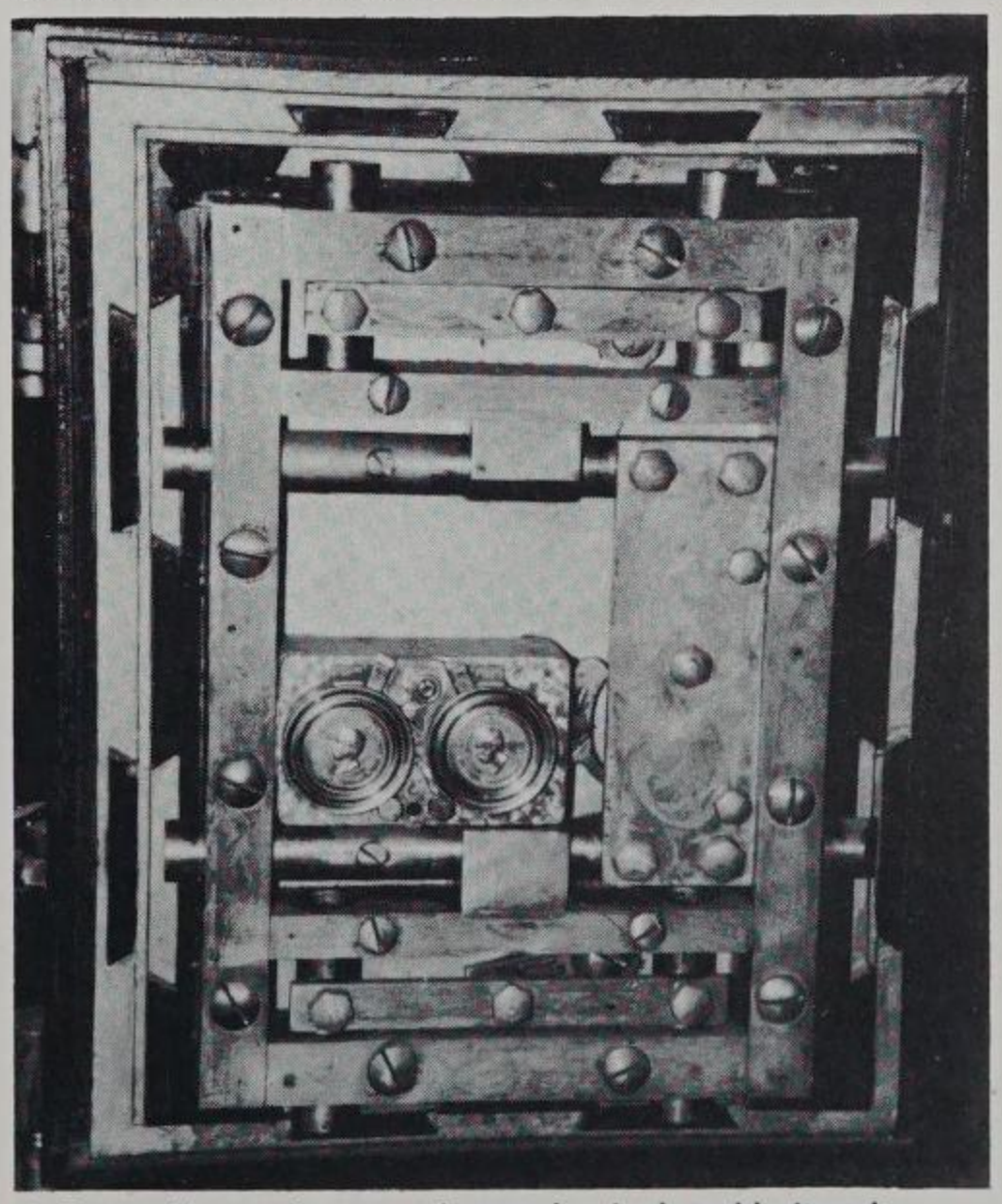
In photograph nine the back panel has been removed. We can see the lock and boltwork. The locking bolts are in the locked position. Incidentally, this safe also has a free-spinning handle. When the lockbolt is extended, the handle spins freely; when the lockbolt is retracted, the handle is engaged with the boltwork and can retract the locking bolts.

In photograph 10, the lock has been dialed open and the



8. The inside of the door with the panel attached.

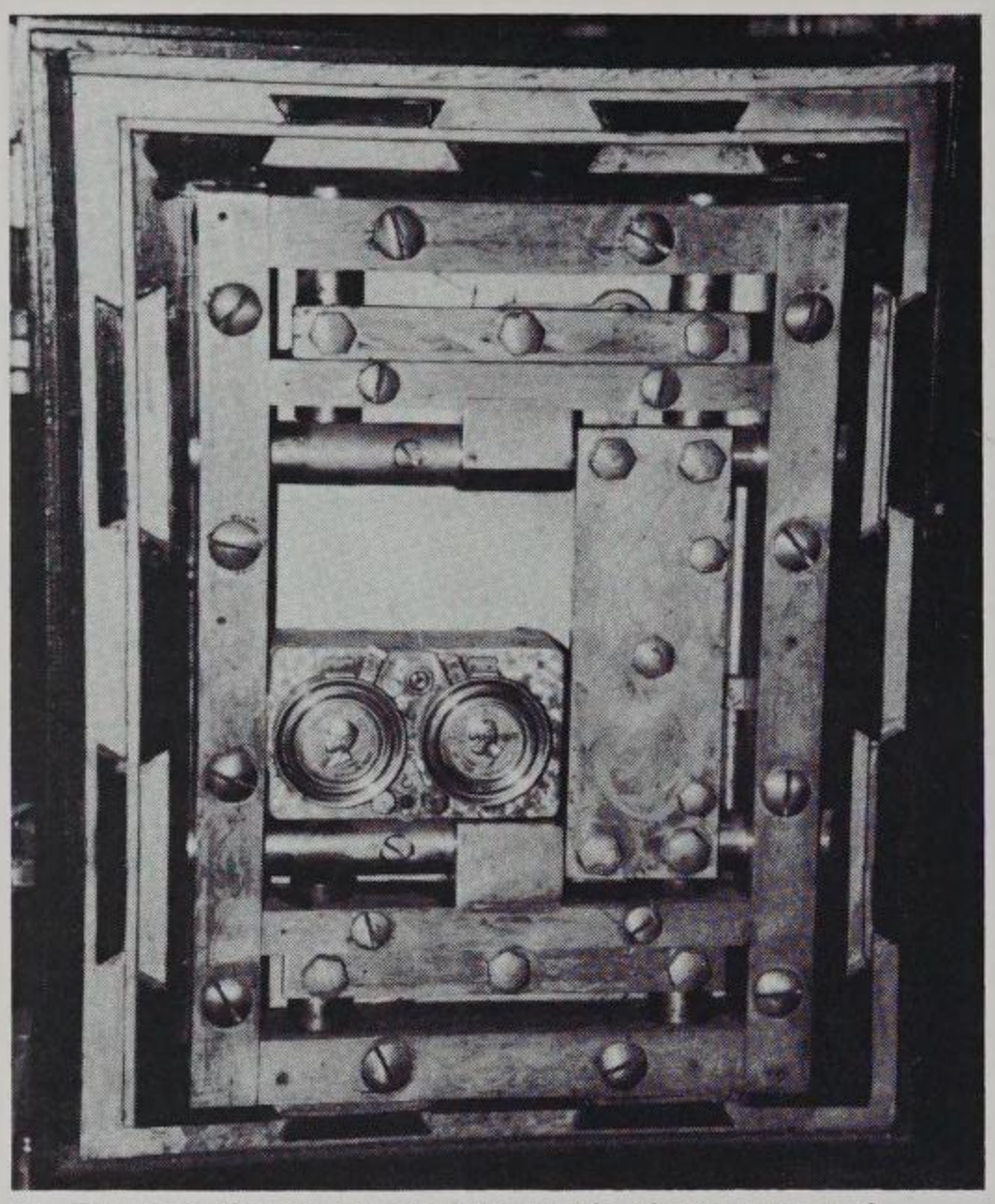
locking bolts retracted. Notice there are locking bolts on all four sides of the door. A 4-way boltwork greatly enhanced explosion resistance in an era where explosive attacks were common. Good grief, I am certainly glad those days are, for the most part, over. I guess I am a big baby, because even firecrackers make me



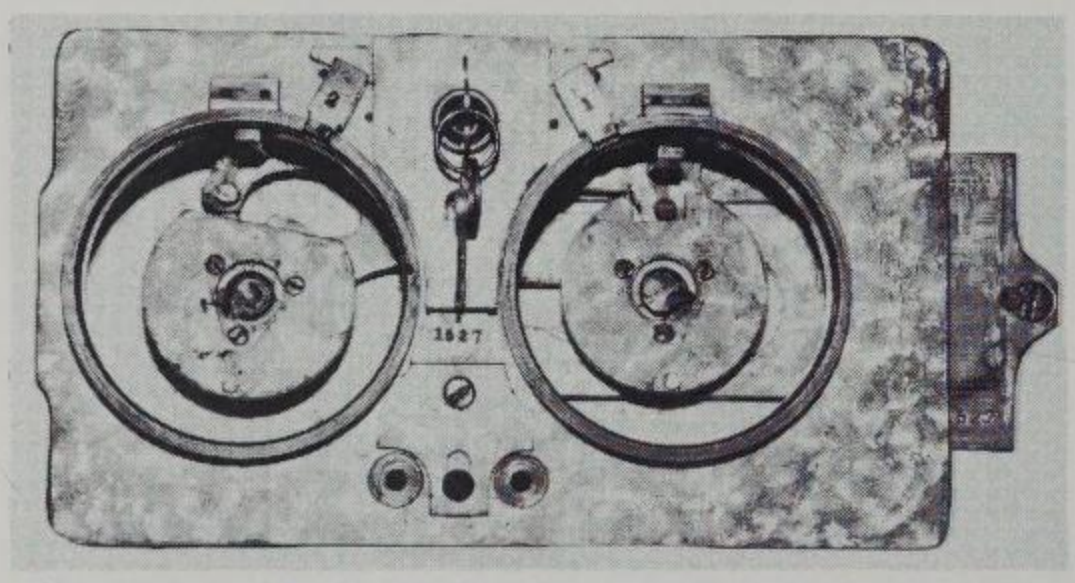
9. Door with panel removed exposing lock and boltwork.

nervous.

In photograph 11 we have a close-up of the Joseph L. Hall's "Premier" double-dial lock. As you can see, there are two drivers, two levers, and two wheel packs. Like the single dial Premier



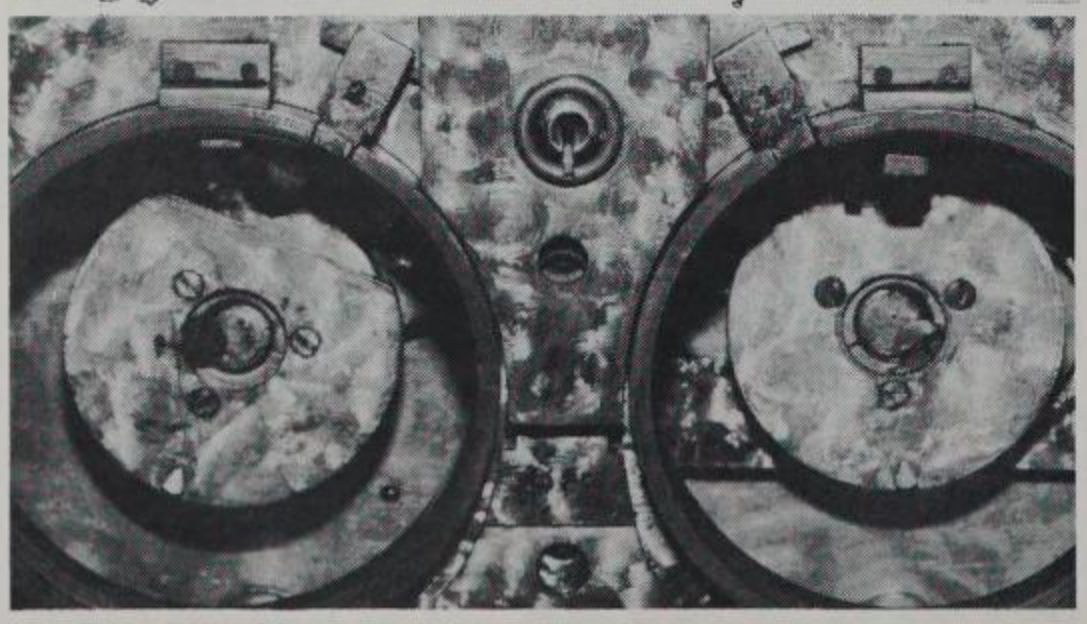
10. The lock dialed open and the locking bolts retracted.



11. Close-up of the Hall's Premier double-dial lock.

locks, the levers with fences on them do not move right and left to retract and throw the lockbolt. When the fence drops into the wheel gates, a secondary piece behind it can be picked up by the arm on the driver. This is what actually controls the lockbolt.

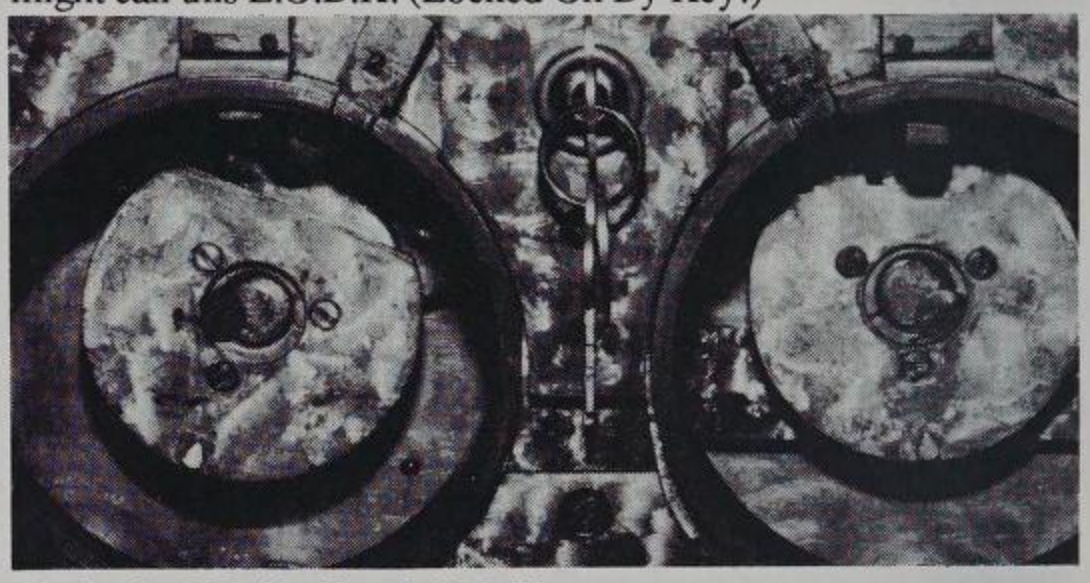
In photograph 12 we have a close-up of the area around the keyhole. With this lock, as with almost all Hall's bronze case locks, you have to push in a little button to unscrew and remove the curb-mounted wheel pack. The reason is that there is a little slot in the curb that the button pops into when the wheel pack is screwed in; and you must push the button down far enough to disengage it from the slot in the curb when you want to unscrew



12. Close-up of keyhole area.

the wheel pack. If you look hard at this photo, you will see a little #1 on the button that releases the rightmost wheel pack, and a little #2 on the button that releases the leftmost wheel pack. Behind each of the buttons you will notice a little wedge-shaped piece, effectively blocking the buttons from being pushed in.

In photograph 13, the key has been inserted and turned far enough to raise the wedge-shaped pieces so that they no longer block inward movement of the buttons. In this position the buttons can be pushed in and the wheel packs removed. We might call this L.O.B.K. (Locked On By Key!)



13. Locked On By Key (L.O.B.K)

In photograph 14 we have the famous Hall's curb-mounted wheel pack. There are five 2-7/8" diameter (no kidding) wheels in this pack. They are unusual in that they are hole change wheels, but still have movable flies. The arrow is pointing to the little slot that the button engages in when the wheel pack is screwed into the lock.

I should point out that Hall's manufactured another type of double-dial lock that is considerably different from this one. It was called the "Crescent" and the levers were on the side rather than on the top. They are easily distinguished by the dial ring

14. The Hall's curb-mounted wheel pack.

diameter. The Crescent used a dial ring with a diameter ring. The Crescent used a dial ring with a diameter of just under 3", whereas the Premier we have been examining uses a dial ring with a diameter of 3-1/2".

Well, that about wraps it up for this month. Hall's and Mosler sure made some beautiful safes, didn't they?

Hey, the next time you are in your County Treasurer's office to pay your taxes, ask about their safes. It just might make parting with your hard-earned dollars a little less painful. §

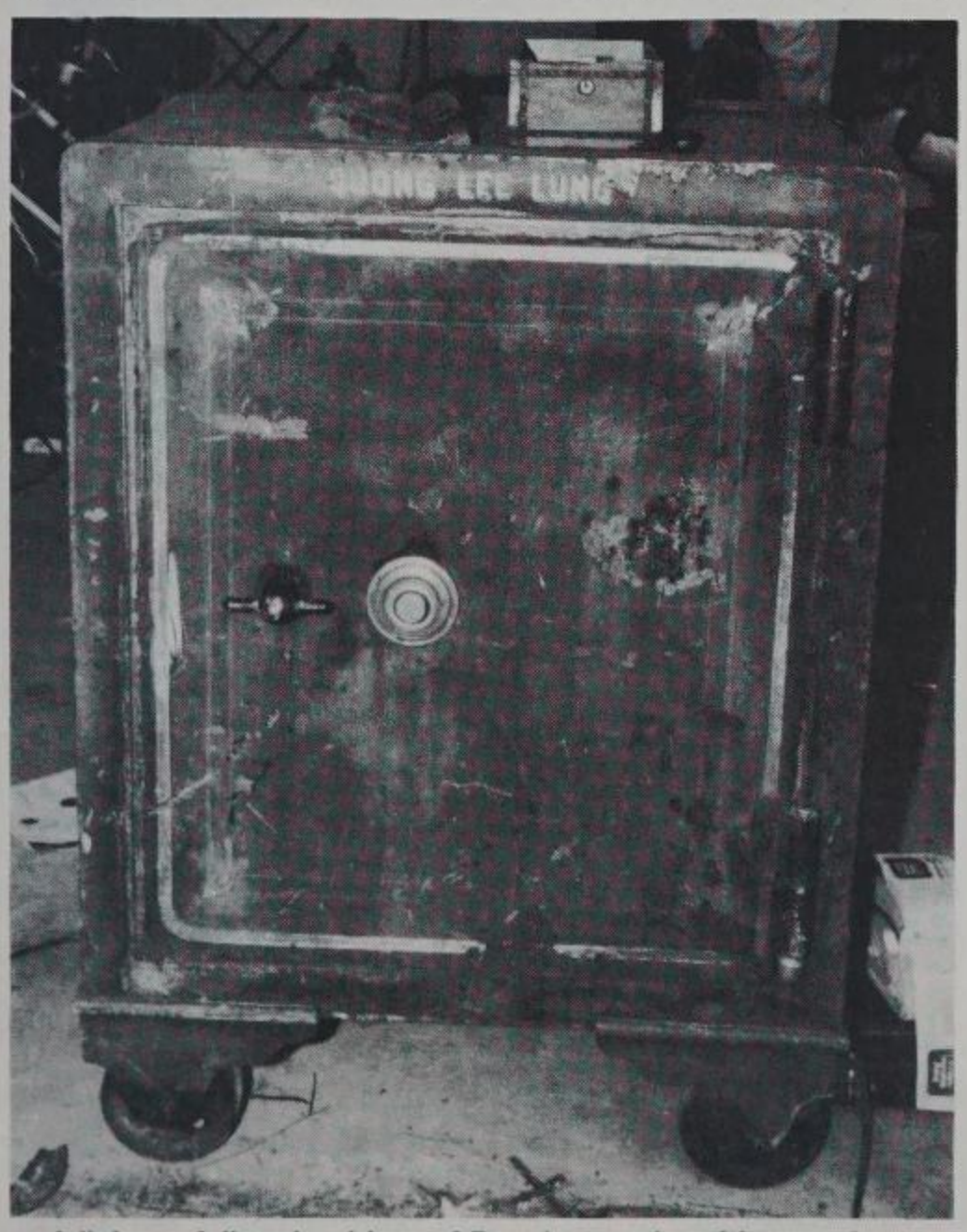
Pittsburgh Safes

"This month we are going to take a look at a safe named for the city of Pittsburgh. I had occasion to open this safe recently by drilling."

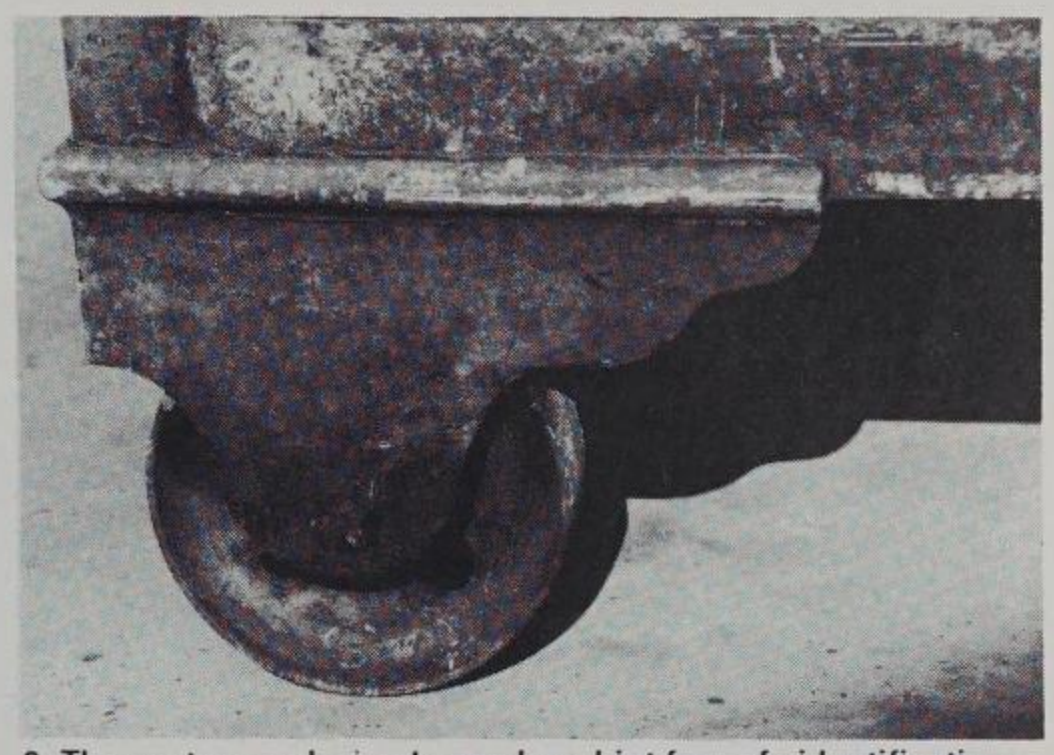
by Dave McOmie

Quick: Off the top of your head, how many safe manufacturers can you think of that were named after a U.S. city? BZZZ! Chicago, Detroit, Pittsburgh and York spring readily to mind. Cincinnati was hooked up with MacNeale & Urban; Phoenix with Remington Rand; New York (Manganese) is a puzzle as to who the manufacturer was. Any others? This may not, and probably is not, a comprehensive list, so if anyone out there has anything to add, please drop me a line.

This month we are going to look at one of the city-safes that I opened recently. Take a look at photograph one and take a guess. No, not Quong Lee Lung, he wasn't on our list, and I doubt that Quong Lee Lung is or was a U.S. city. I should point out that it is easy to mistake a name written on the safe in gold-leaf lettering for the manufacturer. In many cases the name you see isn't the manufacturer at all; it is often the dealer who sold the safe or perhaps even the end user. In any event, try again.

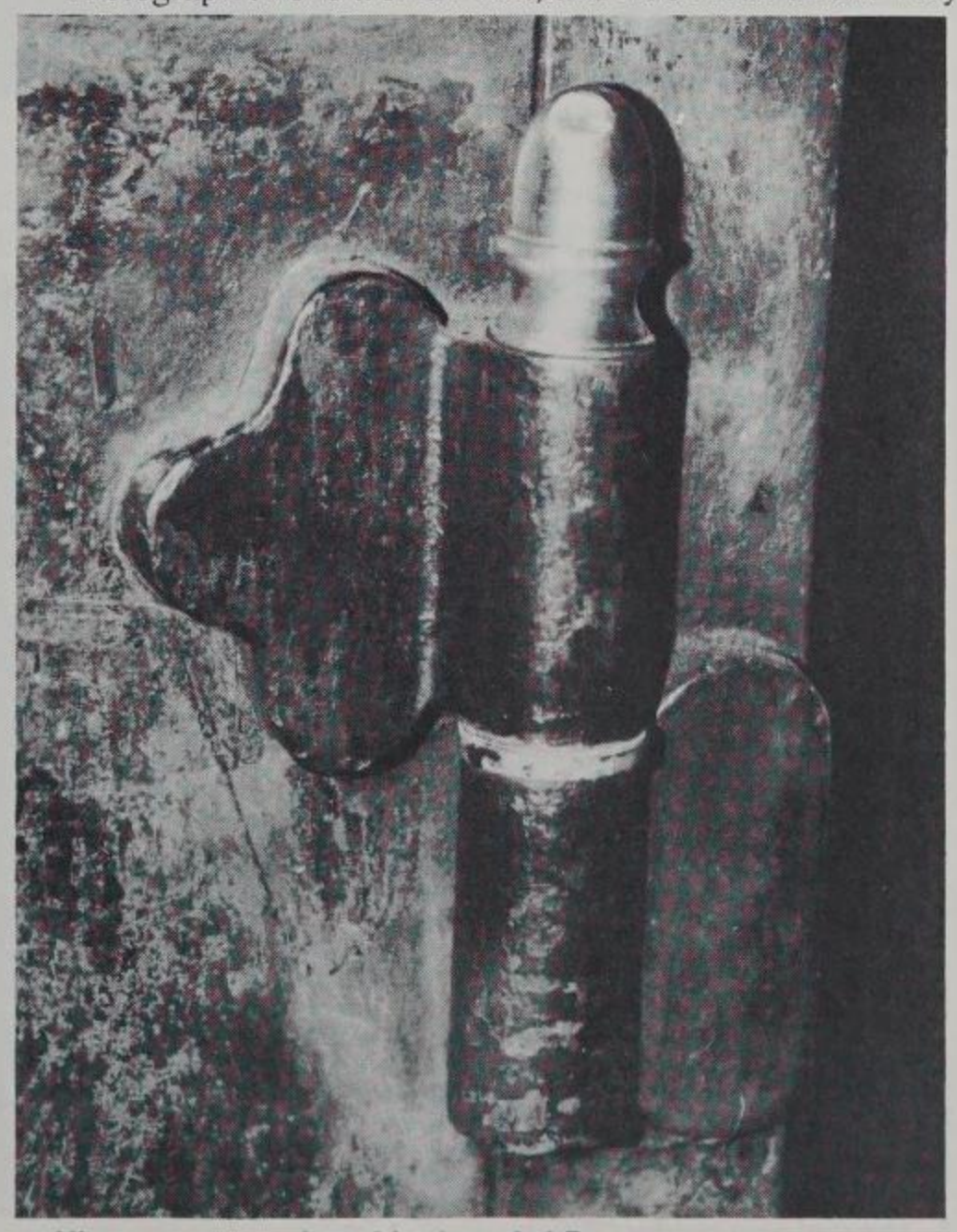


1. A "city-safe" and subject of Dave's opening this month.



2. The casters and wheels can be a hint for safe identification.

Photograph two is a small hint, and I do mean small. Very



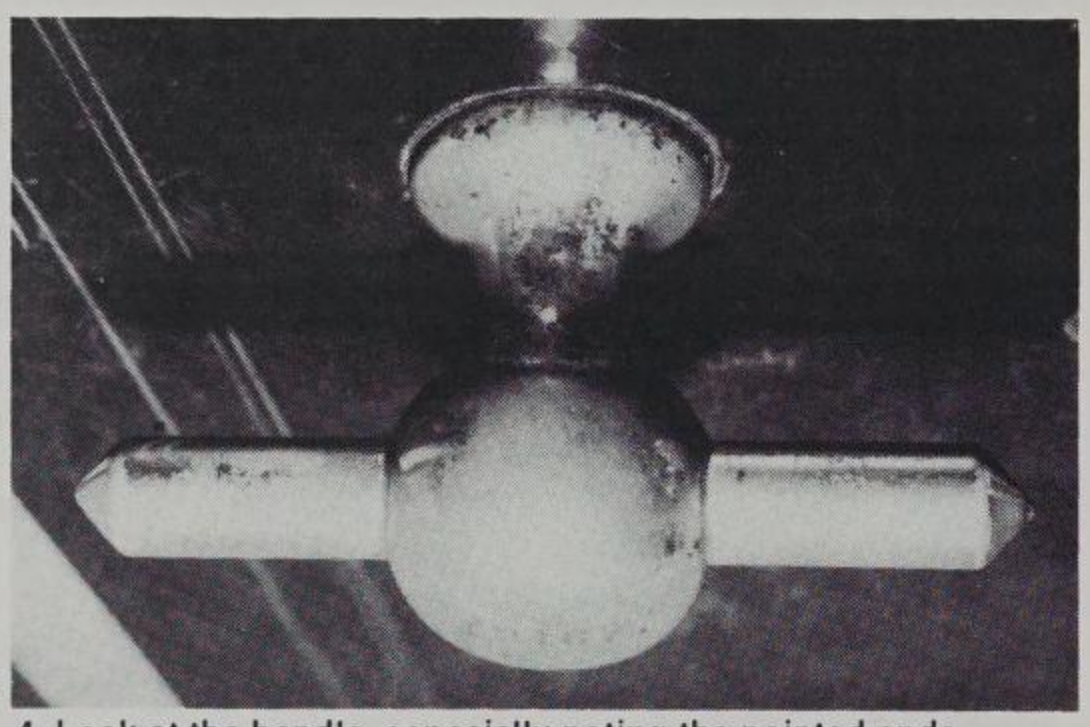
3. Hinges can also be a hint in safe I.D.

few people have familiarized themselves with casters or wheels to the point of being able to identify a manufacturer by this feature. One of my long range goals is to change that, so keep this one for your files.

Photograph three is a little bigger hint. A similar but slightly different version of this hinge design was used by Cary, but they are not on our list, so it can't be them.

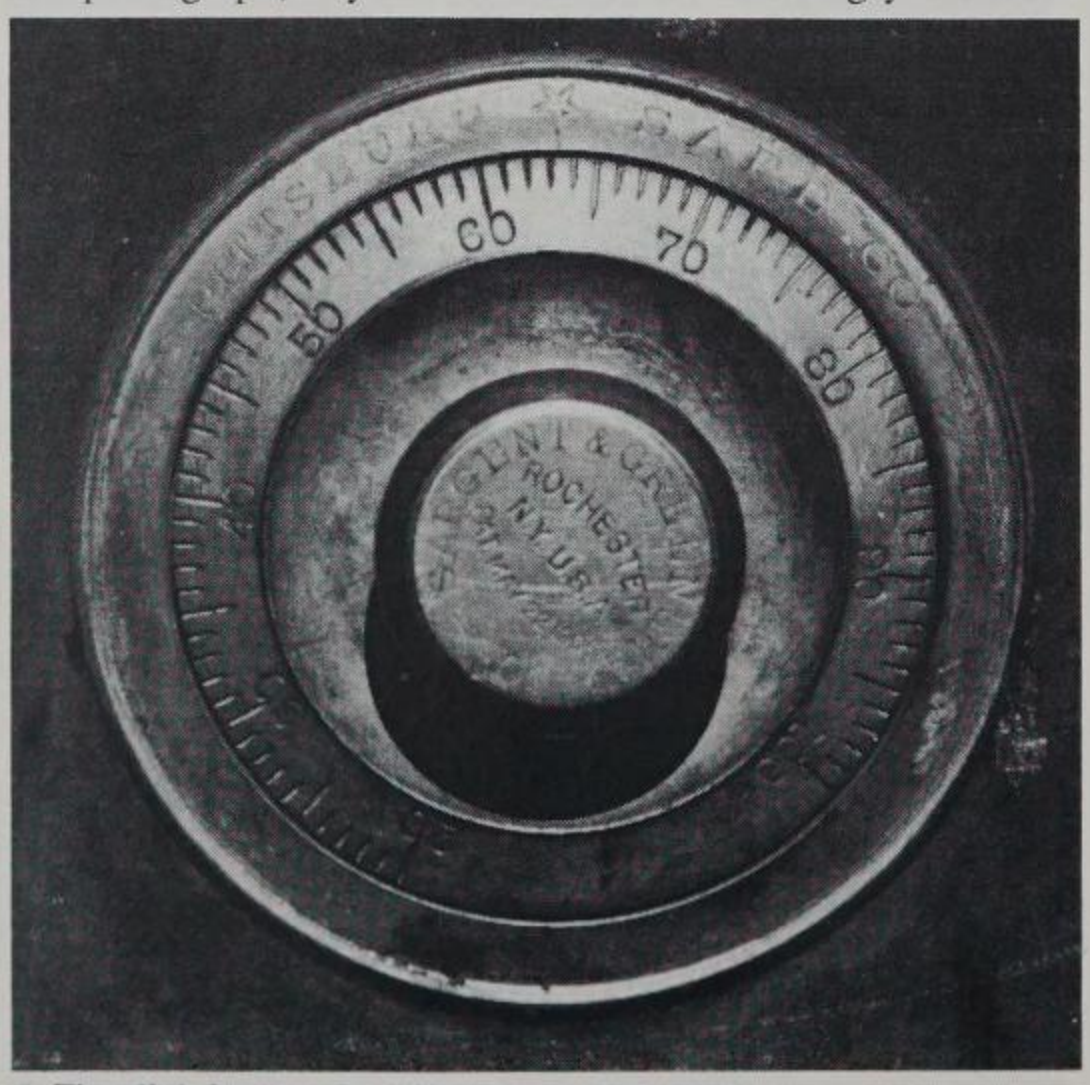
A word of advice: Do not attempt to use the hinge tips, or acorns, as a method of identification. They have been changed or swapped out too many times over the last hundred years for there to be any consistency. I'll bet the biggest safe dealer in your area has a couple of big boxes of hinge tips that they mix and match whenever they restore an antique safe. For you to try and use the hinge tips for identification is the Diebold you are working on might have originally been on a Mosler. We run into a similar difficulties with dials and handles, but with much much less frequency. On the whole, dials and handles are very reliable as identification aids. So let's continue our examination of the yet unidentified city-safe, and look at the handle and then the dial.

Photograph four is a dead-giveaway. Notice the points on the ends of the T-handle. Only one manufacturer used this pointed handle. Hint: home of the Pirates and the Steelers.



4. Look at the handle, especially noting the pointed ends.

Photograph five gives it all away. I hope it comes out in the photograph; if you look hard at the dial ring you should hopefully be to able to make out "PITTSBURG SAFE CO."



5. The dial ring reads: "Pittsburgh Safe Co."

Yep, Pittsburg was kind enough to put their name right on the dial ring. This sets them apart from almost everybody else. Notice the S&G dial with the "forbidden zone" on the dial—this is the big blank spot between 100 and 20. On the dial knob it says, "SARGENT & GREENLEAF CO.; ROCHESTER N.Y., U.S.A. PAT. MAY 22, 1906." One other thing to notice is the star that acts as the opening index. S&G was by far the most prominent safelock manufacturer to use a star for an opening index.

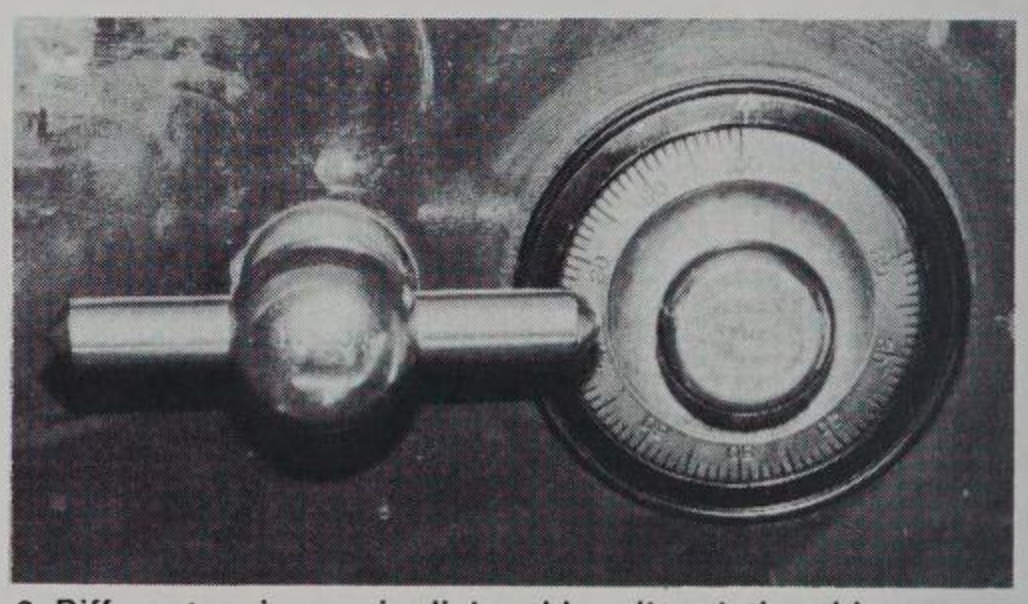
To show you some of the variances in the dial and handle relationships, I have included photographs six and seven of two other Pittsburg safes I have run across. Notice that the distance from dial center to handle center is visibly different from the safe shown in photograph one to the dial and handle arrangements shown in photographs six and seven. They all use the same pointed handle; both dials carry the same patent information mentioned earlier, have the same forbidden zone, and both dial rings use the star index.

Well, with preliminaries out of the way, let's get down to the business of opening the Pittsburg.

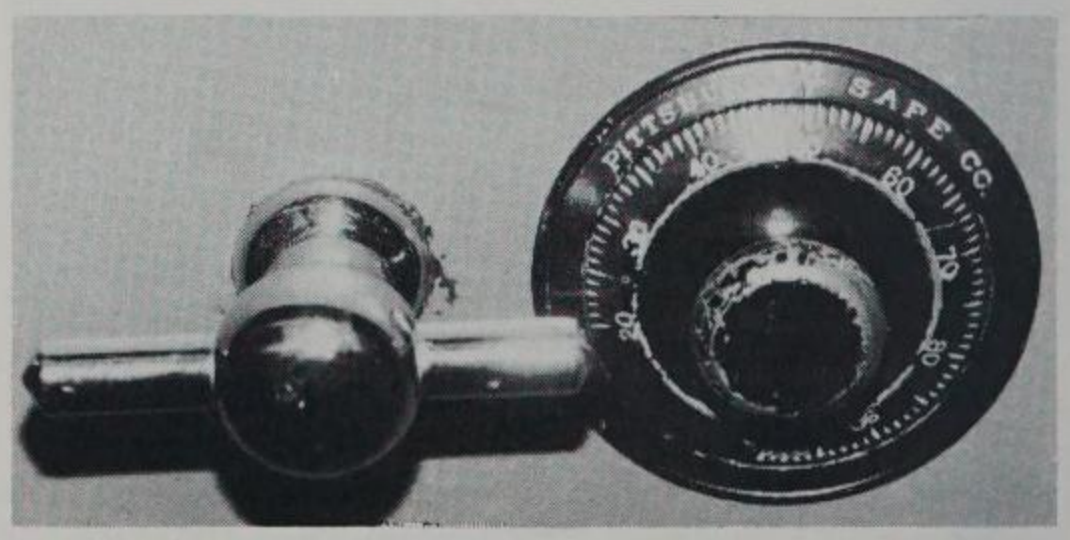
The situation was a lost combination. The owner had recently purchased the safe (as-is) at an auction. He was absolutely shocked that my fee to open the safe was more than double what he had paid for the safe. But he just had to know if the mother-lode was inside, so he begrudgingly gave me the go-ahead.

On a Pittsburg safe, the construction of the lock lends itself well to manipulation. But a real safecracker, who knows how assert his manhood, wields his big drill without apology. Anyway, drilling gives 'em a better show.

But where to drill? Well, this lock has a nice big open spot between 80 and 100 just waiting for a borescope. There is no



6. Different variances in dial and handle relationships...

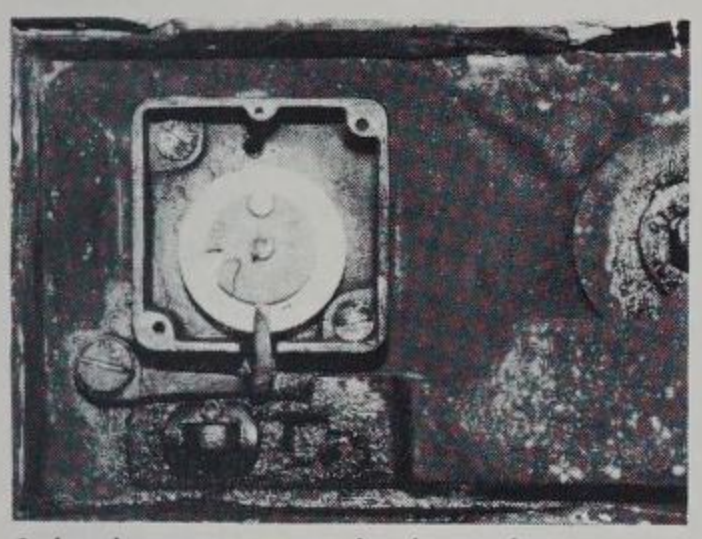


7. ...found on other Pittsburgh safes.

hardplate, so we angle in from outside the dial ring at 100 (with the dial set on 100). This brings us into the open spot in the lockcase. Olympus spots the wheel gates, which are transferred around to the drop-in point opposite the drilled hole. The dial is set on 100 which lines the driver gate up

with the fence. The handle is now rotated counterclockwise; the safe is open.

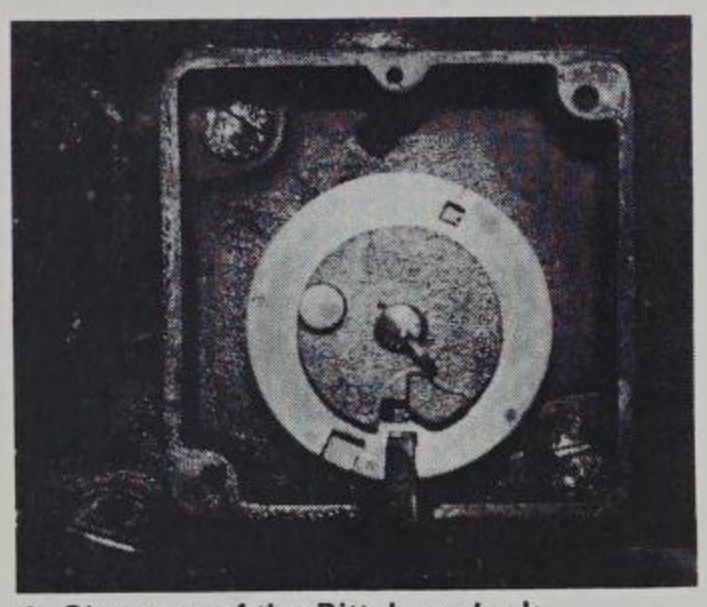
Photograph eight shows us the lock arrangement in the Pittsburg. You can see my drilled hole just above the wheels. This OB-type lock was manufactured by Sargent & Greenleaf many moons ago. It actually operates more like a Yale HE, in that the dial does not come to a stop on the last turn. After the wheel gates are lined



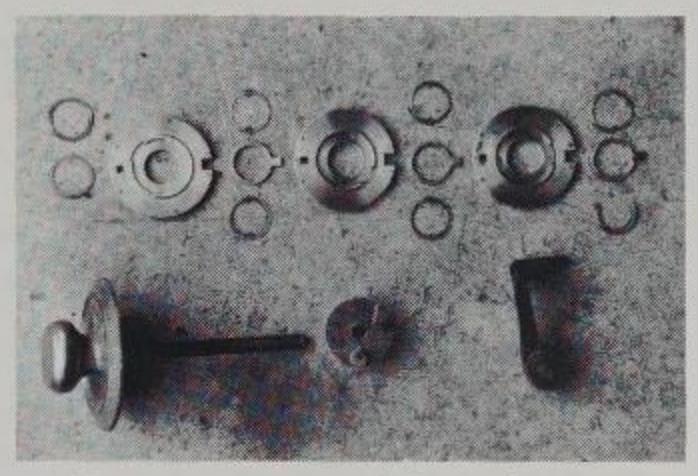
8. Lock arrangement is shown here.

up, you must set the dial on 100 to line up the driver gate with the fence. When the handle is rotated it forces the fence up into the gates. It is that characteristic that makes manipulation a very viable method of entry on these safes. And the truth is that the only reason I didn't manipulate this one is that I had reservations about the customer coughing up the dough. He had complained enough, and I wanted him to feel he was getting his money's worth. Given the absence of hardplate, which makes drilling a Pittsburg a piece of cake, is hard to argue convincingly that either method is objectively preferable. Suffice it to say that I prefer a moving stage to a still one.

Photograph nine gives us a close-up of the lock that I cannot find in any of my



9. Close-up of the Pittsburg lock.



10. The components of the lock

antique S&G catalogs. In this photograph we can see the lever at the bottom of the lock. There are three 2 1/8" diameter wheels and a rear-mounted driver. Remember, the dial does not come to a stop; you have to rotate the handle and force the lever up into the wheels.

In photograph 10 all the parts of the lock have been removed for our inspection. Look at all those spacing washers!

Well, that about wraps it up for this month. I have never been there, but Pittsburg was a great place to visit. Where shall we travel to next month ?§

Identify These Safes!

by Dave McOmie

This month you will find photos and information on safes that I cannot identify. Most are gorgeous works of art.

I read an interesting article recently. It was in one of those tabloids that you see in the supermarket check-out line. The gist of it was that most people love contests, and that some people are almost pathological in their pursuit of contests to enter.

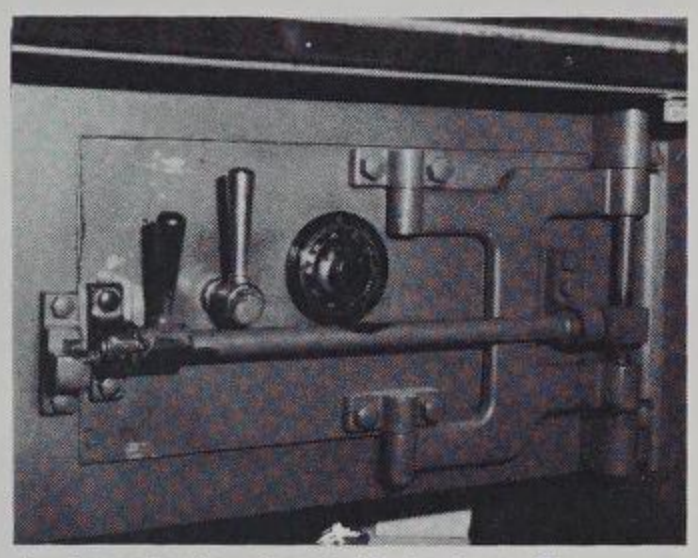
Well, this month we are going to have a contest. Yours truly is really royally stumped. This month you will find photos and information on nearly a dozen safes that I cannot identify. Most of them are gorgeous works of art that I am hoping some of you can positively identify. What I mean by "positively identify" is to either have photos of a similar safe that has the manufacturer's name on it somewhere, or to have an old catalog page from yesteryear which contains the safe in question.

What is in it for you? Well, in addition to the proud feeling of accomplishment, each person who makes a positive identification will receive the following: 1) an autographed book from my collection (they will be selected at random); 2) an assortment of photographs from my collection (also selected at random); and 3) my public thanks to be expressed in this column over the next few months (hopefully not too much at random!)

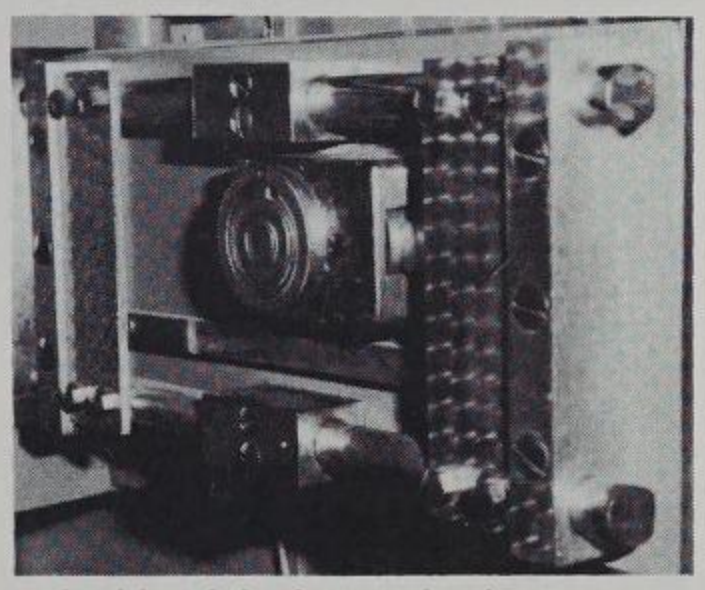
With the preliminaries out of the way let's get down to business. In photograph one we have a jeweler's chest that was opened at a seminar I took part in at Ed Dornisch's warehouse in Philadelphia. The upside-down handle always makes me reflexively think York, but this time I doubt it. The crane hinge is unlike anything I have seen.

In photograph two we see the inside of the chest. We can see the lockbolt of the old S&G 6820 roller bolt lock.

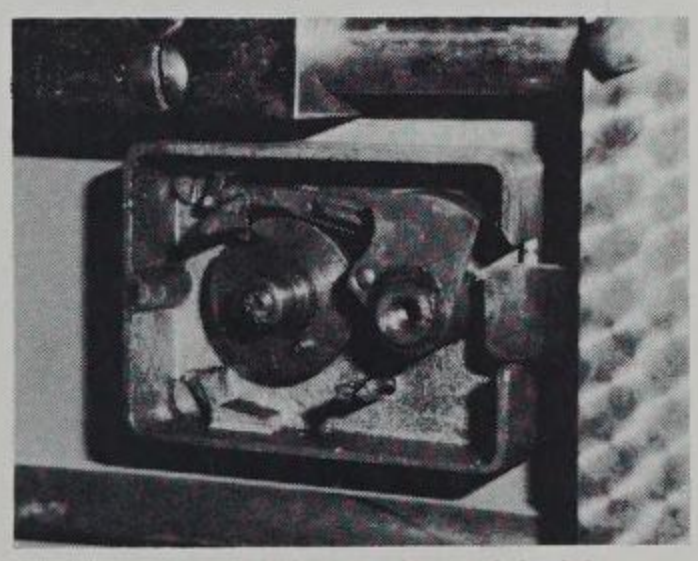
In photograph three we have a close-up of the lock with a drill bit sticking out the drilled hole. In this trophy picture the lock is in the unlocked position. Any clues?



1. Jeweler's chest. Note handle.

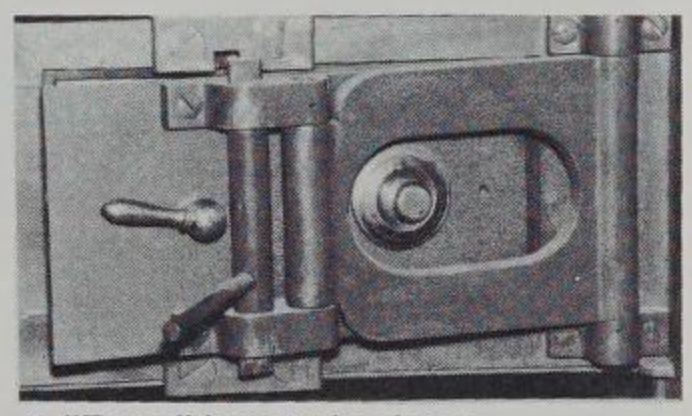


2. Inside of the jeweler's chest.

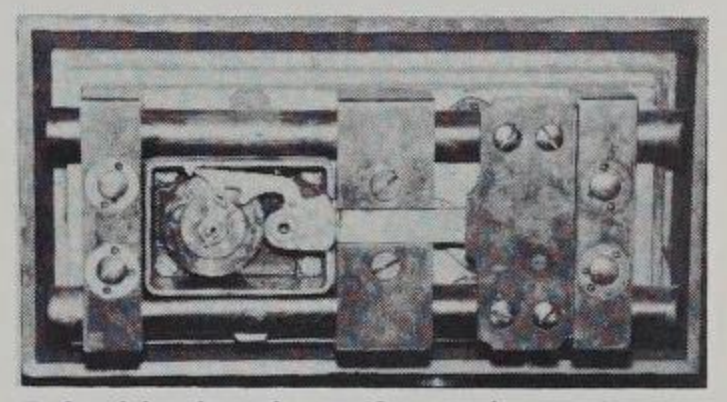


3. Close-up of the lock w/ drill bit.

In photograph four we have a jeweler's chest that I photographed in Reno. The handle is reminiscent of a Mosler-Bahmann. The dial is an S&G with a large blank spot in the "forbidden zone." Once again the crane hinge is like nothing I have ever seen.



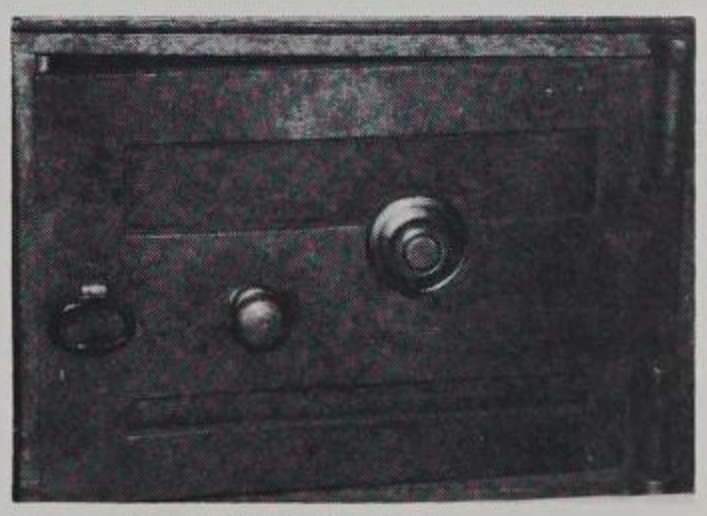
4. "Reno" jeweler's chest.



5. Inside the chest (from photo 4).

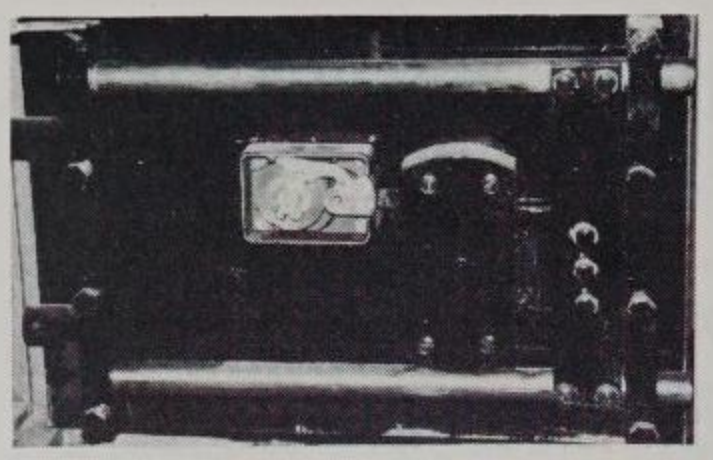
Photograph five shows us the inside of the door. This time it is an old S&G 6810 roller bolt lock. In this photo the chest is in the locked position. Gotta guess?

Photograph six has Hall's written all over it. Or at least that is what my friend Skip and I thought when we saw it in his hometown of Cleveland. The pull handle to the left led us astray. Notice the odd bolt-control doorknob type handle in between the dial and pull handle.



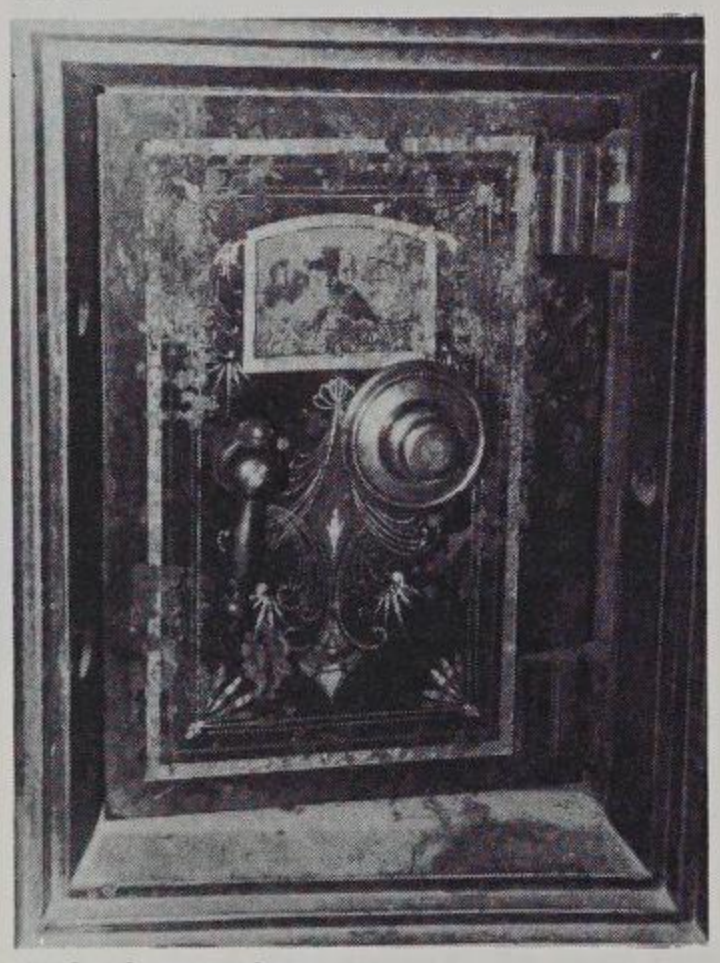
6. Suspected Hall's safe.

Photograph seven takes us inside. The S&G roller bolt guarantees this is not a Hall's. But then, what is it?



7. Inside the safe (from photo 6).

Photograph eight is of an inner chest my friend Rollin Gilliland rounded up during a seminar we put on in Kansas City. The handle looks like a cross between a Herring and a MacNeale and Urban. The dial is a Yale.



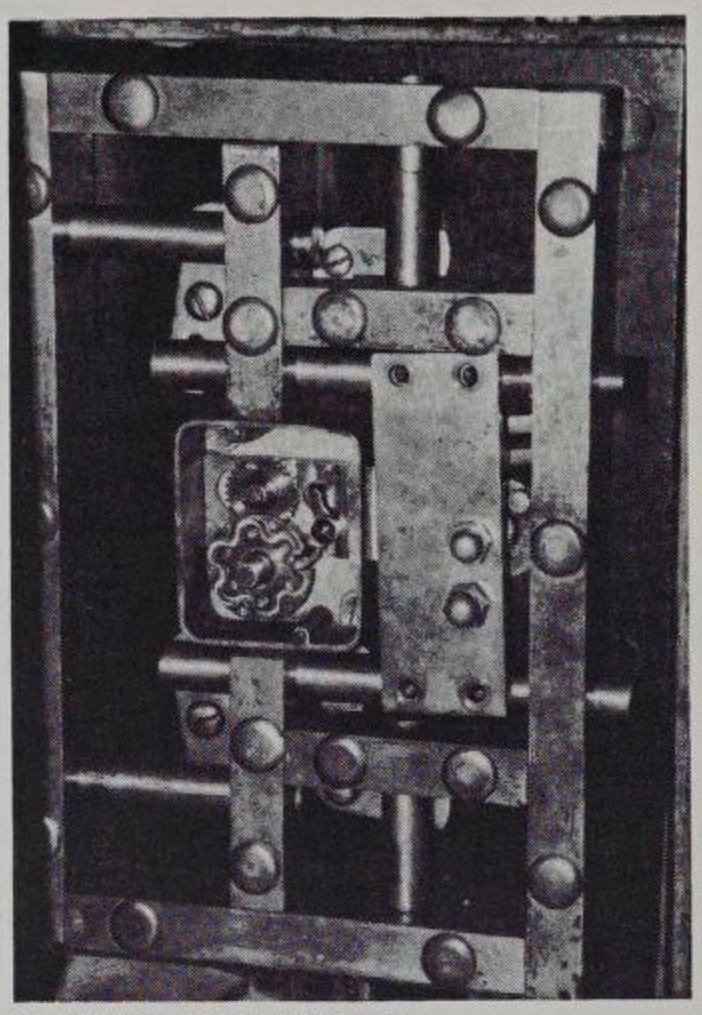
8. An inner chest.

Photograph nine makes me instantly think Mosler-Bahmann, but it is not like any Bahmann I have ever seen. The Yale 063-1/2 does not have a hook-type lockbolt like a Bahmann would have, but has a regular square-shaped lockbolt. And the handle does not free-spin. What do you think?

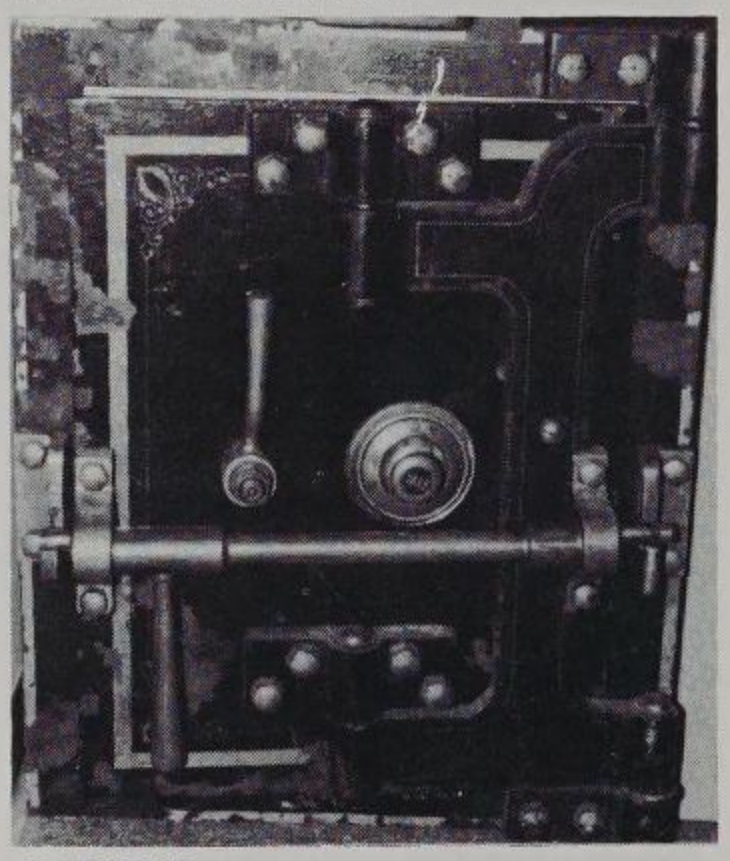
Photograph 10 was taken during a seminar that Sal Lavalle and I put on at his shop in Pennsylvania. The nut on the end of the upside-down handle makes me think HHM, but other than that I have nary a clue; do you?

Photograph 11 is of the inside, which is equally obscure. Nothing rings a bell for me; does it for you?

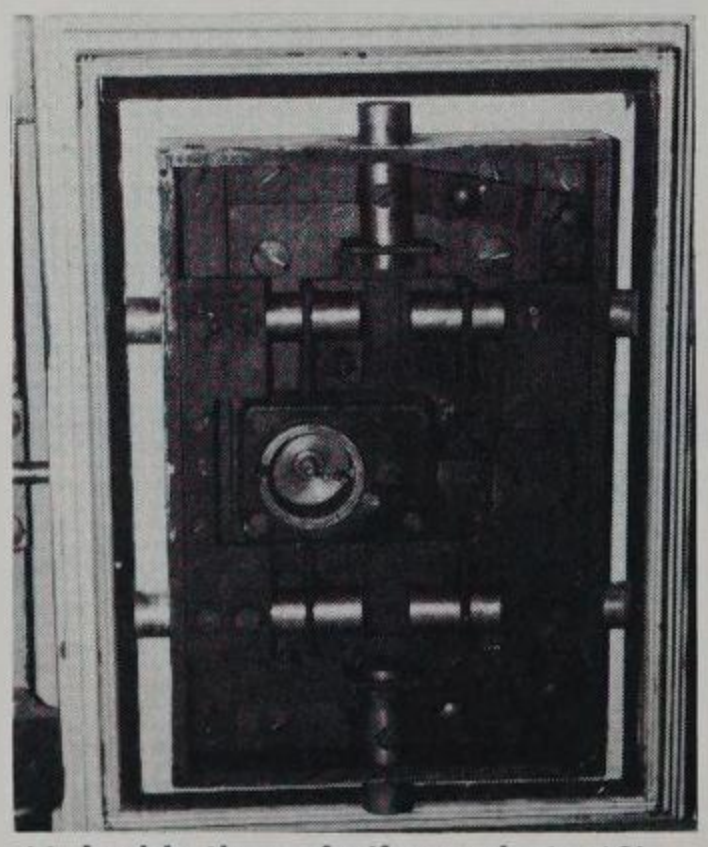
I snapped the safe shown in photograph 12 at one of the largest safe warehouses in the country: Eric Mueller's Southern California Safe Company in Los Angeles. The most unusual thing about the outside is the pressure bar that looks like a panic bar. Also notice the double



9. A Yale 063-1/2 lock.



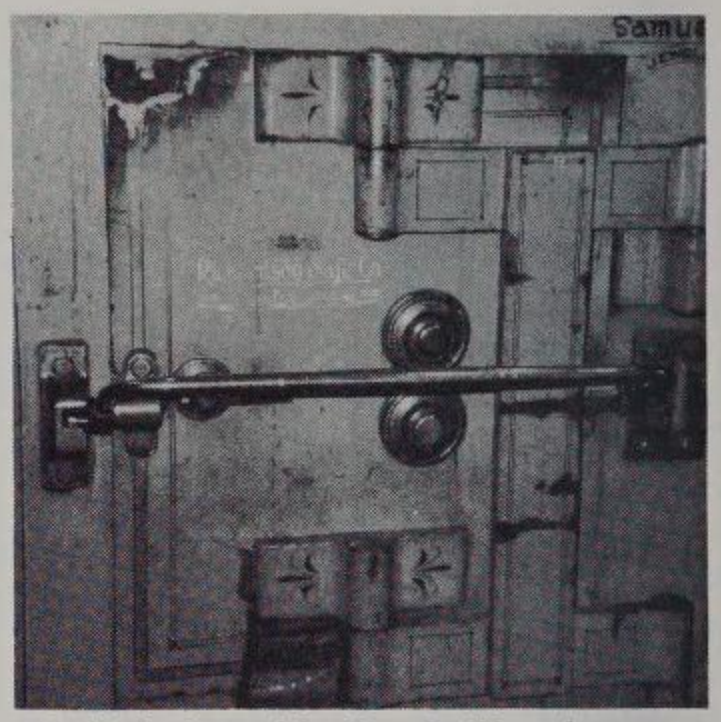
10. HHM?



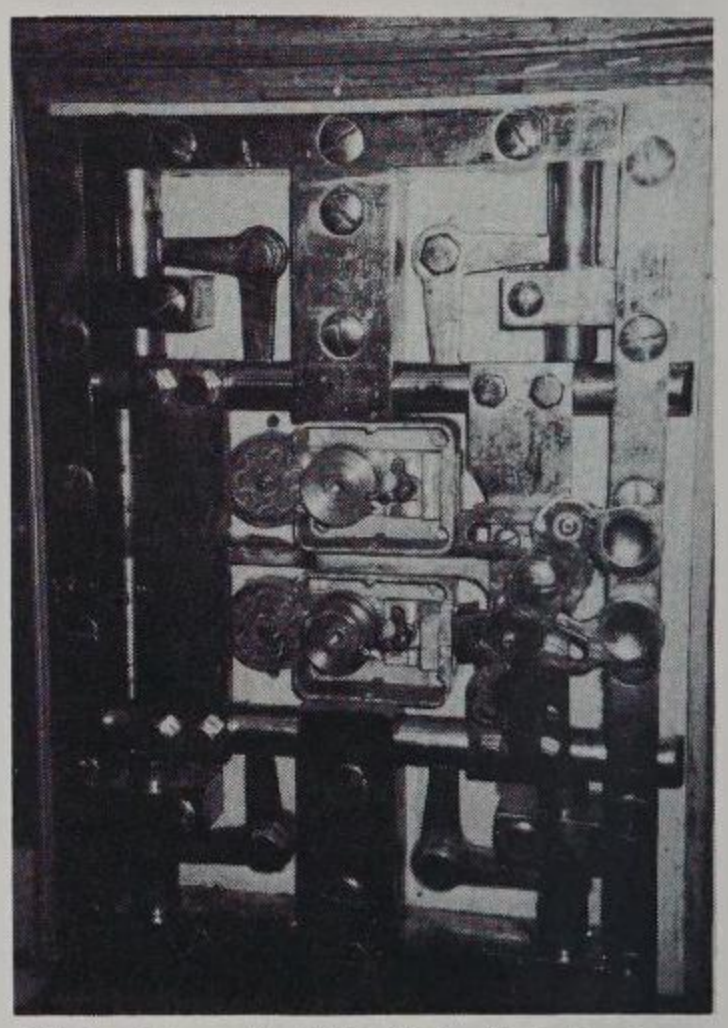
11. Inside the safe (from photo 10).

dials.

Photograph 13 gets us inside for a look at the pair of Yale 025-1/2 locks. Aspects of this boltwork are similar to



12. Safe found in So. California



13. Inside safe #12. Note Yale locks.

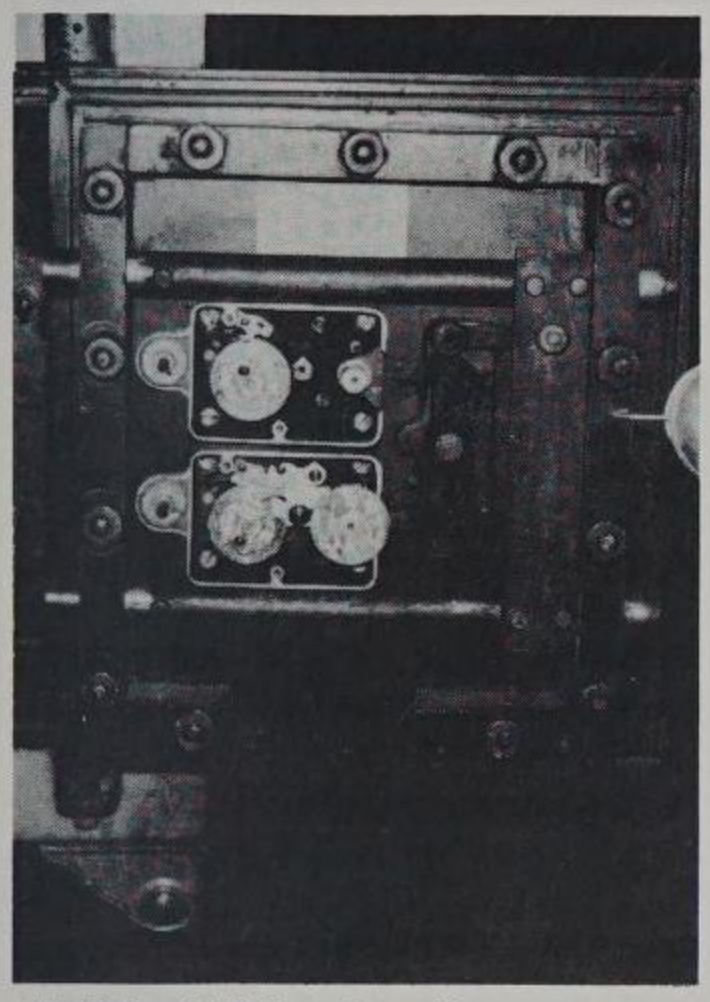
a couple of safes we will be looking at a little later. Do you have any idea?

Photograph 14 takes us way back. The double dials are S&G. Notice the odd, flat casters. This one

14. Safe with double S&G dials.

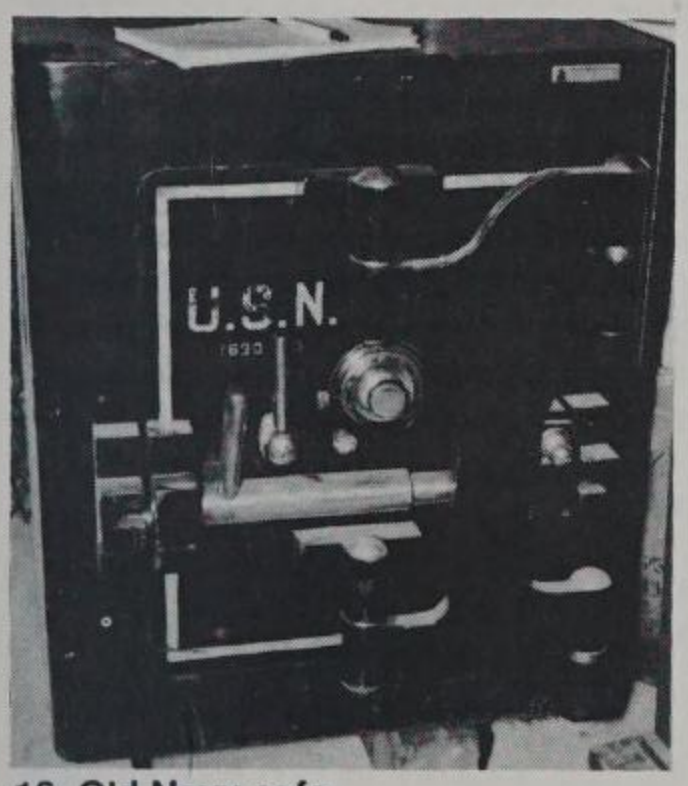
was photographed at Guardian Safe Co. in Cleveland, Ohio.

Photograph 15 gives us a look at a pair of classic locks, both of them S&G #2 Automatics. I draw a blank; I hope you don't.



15. Pair of S&G automatics.

Photograph 16 is obviously of an old Navy safe. The upside-down handle makes me think either National or York. The dial is an S&G. This safe is owned by Allied Safe and Vault in Spokane, Washington.

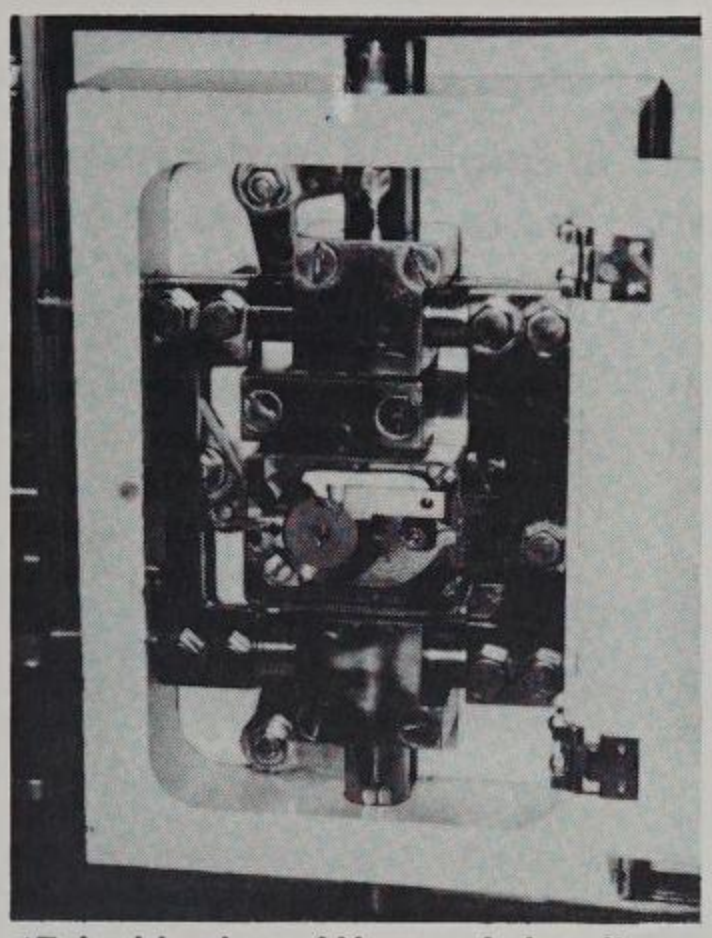


16. Old Navy safe

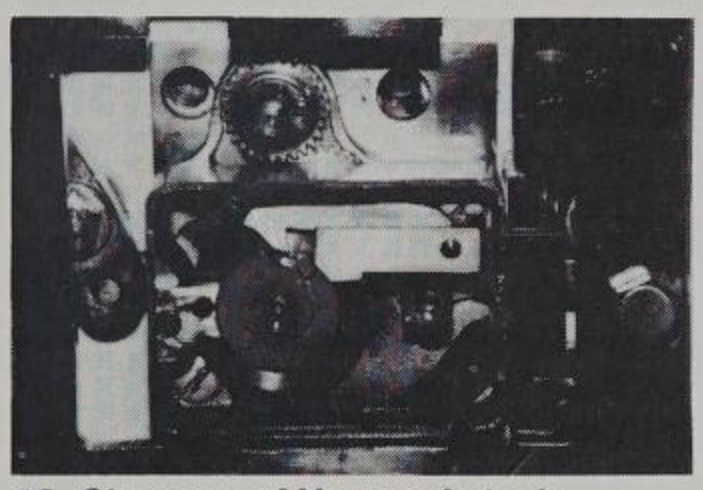
Photograph 17 is a view of the inside. There are a few similarities between this boltwork and the one shown in photographs 12 and 13.

With part of the boltwork removed, photograph 18 gives us a close-up of the lock. This old S&G 6500 series lock is offset down from the spindle. Any ideas?

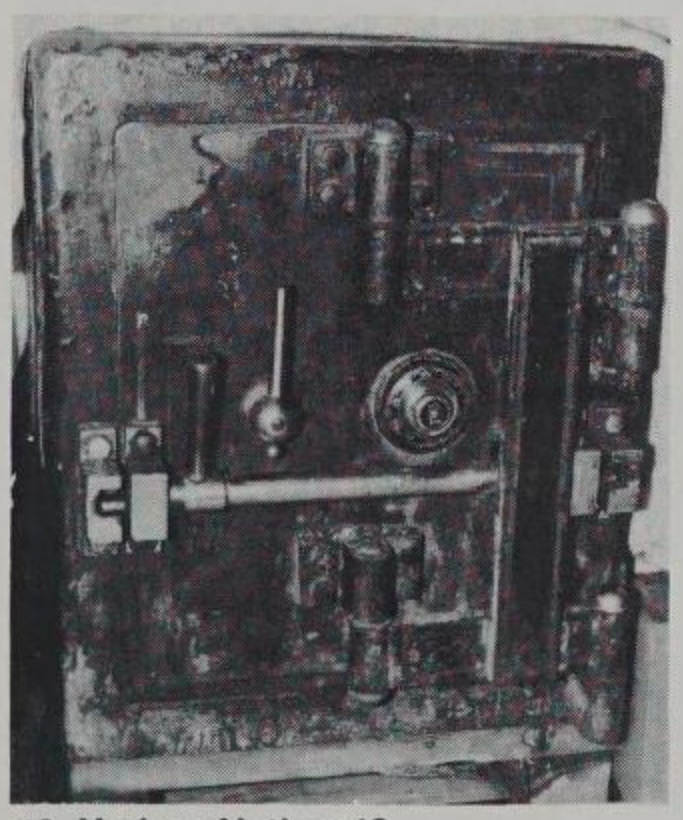
Photograph 19 gives cause for pause. Once again, by the handle and by the hinge assembly, I am guessing either York or National, but I cannot prove it.



17. Inside view of Navy safe handle



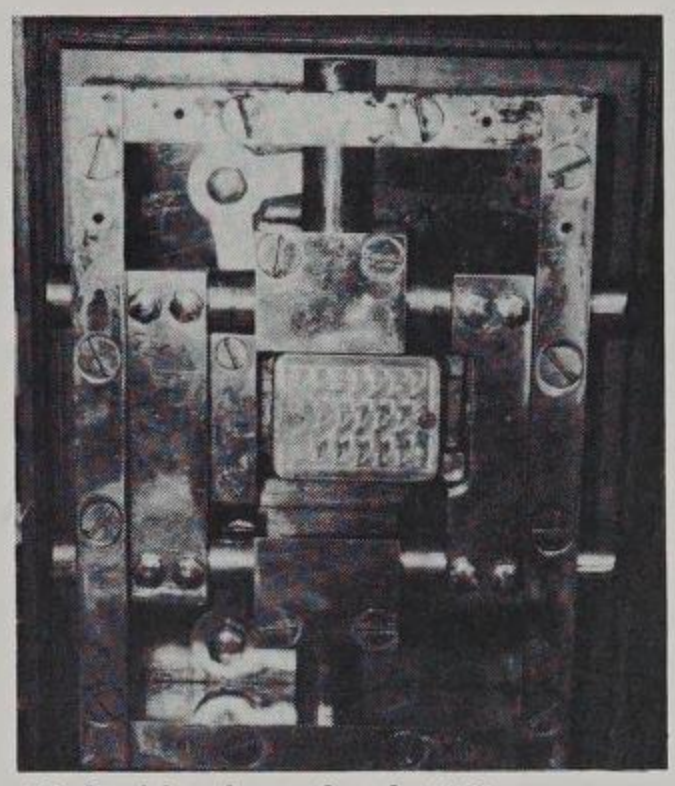
18. Close-up of Navy safe lock.



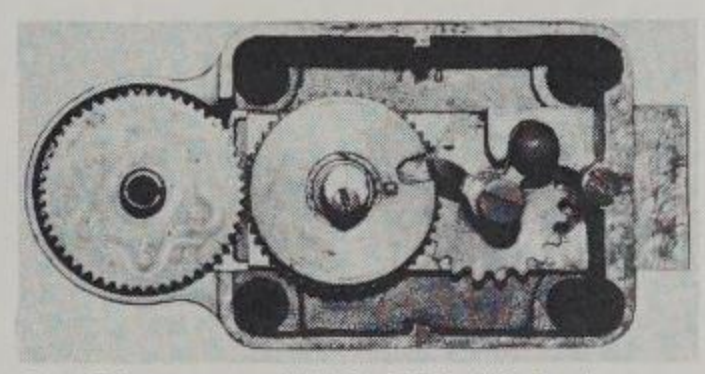
19. York or National?

Photograph 20 is an inside view with the safe in the locked position.

Photograph 21 is a close-up of the Yale 025-1/2 lock. This is an indirect-drive lock. The offset from spindle center to actual wheel center is 2" LC. As I said, I suspect either National or York, but I cannot prove it. Can you?

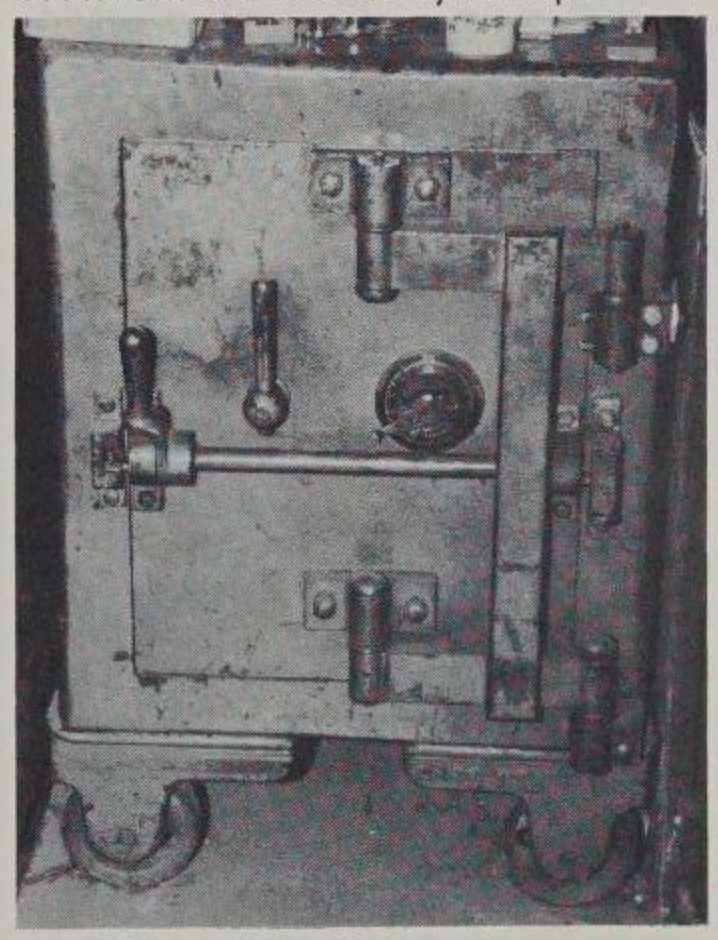


20. Inside view of safe #19.



21. Close-up of Yale 025-1/2 lock.

The safe shown in photograph 22 is very much like the last one. The pressure handle, I am almost certain, is a National. The lock is an old S&G 6561. I am at a loss. Can you help?



22. 99% positive, National.

Well, there you have it. Sharpen up those pencils and drop me a line. If you have a catalog page that identifies one of these safes, please photocopy it and send it in. If you have photos of a similar enough safe that bears the manufacturer's name, then either send a spare photo or a good quality photocopy. I am waiting with a box full of goodies to ship out to the lucky winners. §

For your information: the safe in photos 4 and 5 has tentatively been identified as a Mosler-Bahmann; the safe in photos 16 and 17 as a York; the safes in photos 19-22 are both Nationals.

Opening Tann Safes

by Dave McOmie

"We decided to attack from the side because most high security safes have glass plates in the front."

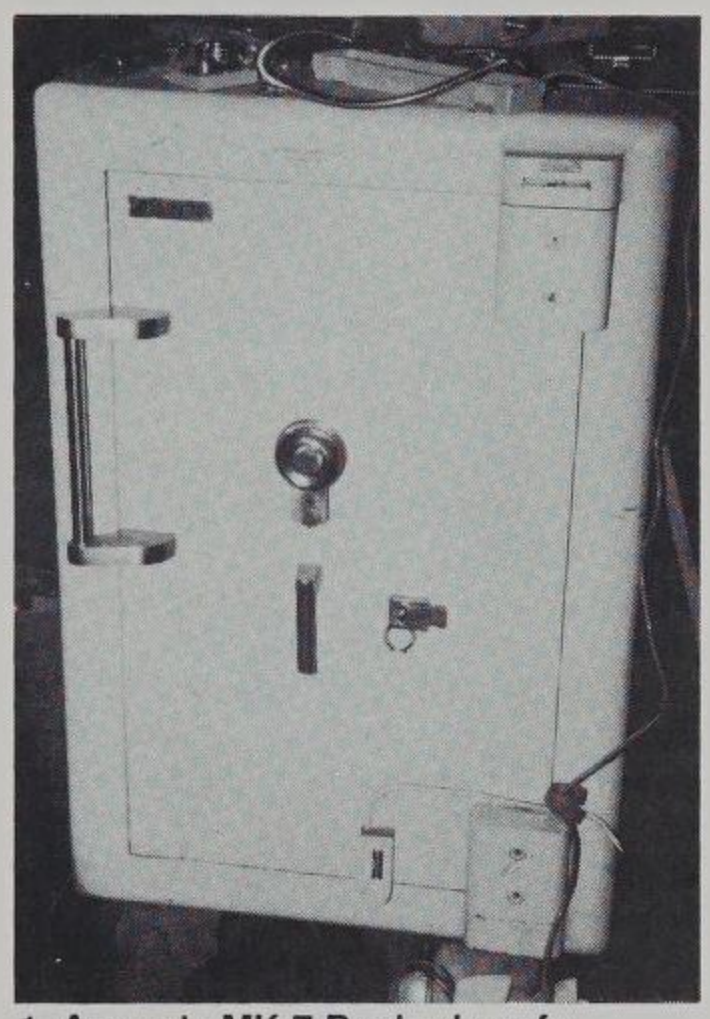
Have Drill love to travel, and to open safes. To be able to do both is heaven on earth. Recently my friend Arnie Foslien from Arnie's Safe & Lock in Minneapolis called with a job for us to do. So I loaded up my gear and hopped on the next jumbo jet headed for the Twin Cities.

Our two opponents were from Britain. Both were John Tann Banker's Cash safes, one an earlier model of the MK-7 (*see photograph 1*), the other a more recent version of the MK-8. (*See photograph 2.*) You will notice that the two safes look nearly identical from the outside, with the important exception of the placement of the dial.

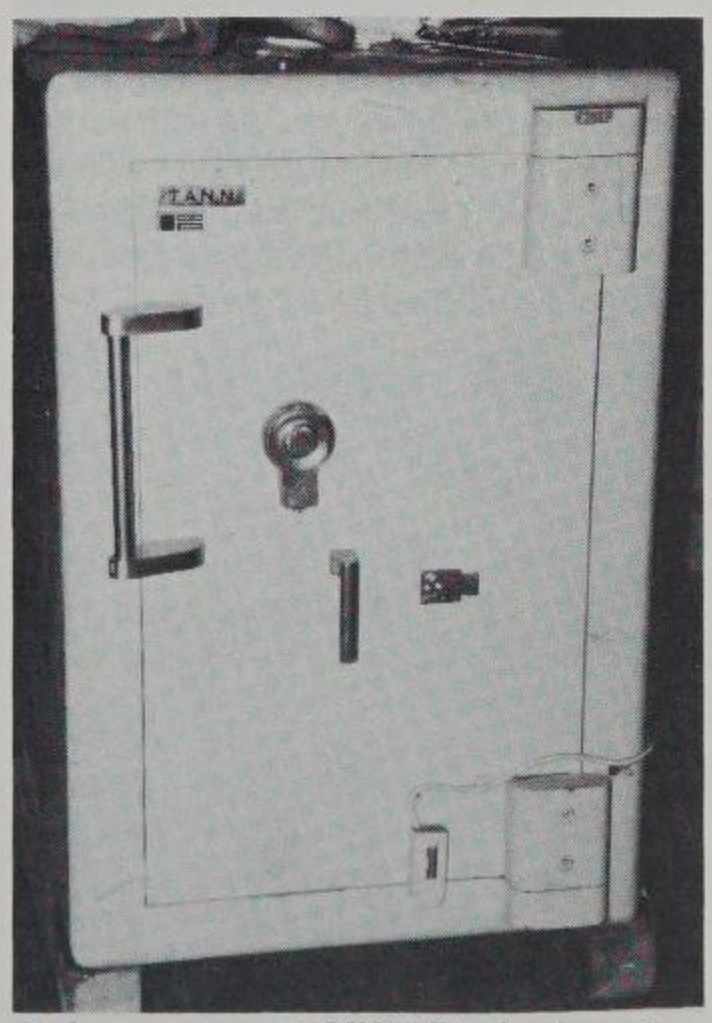
Here was the situation: The owner had the keys to both safes, but had lost combinations. Our British opponents had us clearly outweighed (by several tons!) but Arnie and I had confidence in that good old American ingenuity. Like our forefathers, who were also outweighed by the enemy, we decided to forego frontal attack, and use guerilla tactics: attack from the side. This month we will look at the side-attack on the MK-7; next month we will open the MK-8, and compare and contrast the two models.

The reason we decided to attack from the side is simple: most high-security safe manufacturers install glass plates between the inside of the safe door and the locks. Consequently, if you drill through the door for any part of the lock, you will penetrate the glass and set off the relockers. And that is something that you want to avoid like the plague.

So, we know that we want to drill from the side, but which side? Well, the best way to answer that is to have photographs of a similar safe. And wouldn't you know it, we just happened to have just that. From an examination of the photos, it was clear that the opening side offered



1. An early MK-7 Banker's safe.



2. A more recent MK-8 Banker's safe.

us an unobstructed path to the lockcase, whereas the hinge side was fraught with difficulties.

Okay, we are going to drill through the hinge side, but where exactly do we drill? And what exactly are we drilling for? Those are good questions. We know from examining the photographs (taken from *The National Locksmith Guide to High Security Safes*) that the combination lock used in these safes is a true left-hand Sargent & Greenleaf 6500 series vault lock, mounted LH.

The best place to side-drill just about any S&G vault lock is through the side opposite the lockbolt, right in the middle of the lockcase. Normally, on a 6730 or similar lock, we don't want to penetrate the lockcase right in the center of the wheels because our drill bit is very likely to do some damaging damage! The *last* thing we want is to hit two wheels and tie them together so they will not rotate individually. So, on a 6730 we are better off to drill a little high or a little low, to ensure that we do not damage the wheels. Furthermore, it gives us a better view with our scope.

But as I said, this is not the case with a vault lock. We want to aim for the center of the wheel pack. This is because there is a nice little groove in the lockcase in the center which makes for a convenient spot to insert a borescope, and also because the wheels are quite a distance from the edge of compared to a 6730, where the wheels butt right up against the case. This really makes a difference when you are considering opening strategies.

At this point we know that we are going to drill through the opening side. We also know that we are going to be drilling right for the center of the wheel pack. But how far back to drill? Well, *The National Locksmith Guide to High-Security Safes* (written by yours truly) gives us a measurement of 4-1/2" from the face of the door to the lock. If we do

not have that (fantastic if I do say so myself!) book, we can measure the thickness of the door through the keyhole. Okay, so we know how thick the door is but how much should we add to that measurement to put us at the right depth?

Well, there are two things to take into account: First: if we use the measurement provided by the book, it already includes the glass plate (if there is one) and any air gaps. But if we don't have the measurement from the book, and if we suspect glass, then we need to add the thickness of the glass plate and any air gaps to the door thickness. Second: Once we know how thick it is to the lock, we have to add the appropriate thickness of the lockcase. This will vary, depending on the thickness of the particular lock, and also on the technique being used. If we are drilling for a change-key hole, then we want our hole to come out in back of the entire lock. If we are going to penetrate the lockcase, then we want our hole to be in line with the lockcase, not in back of it.

In this case, we are drilling to penetrate the lockcase towards the goal of reading the wheels with a borescope. This gives us nice fat target to aim for, as the lockcase of a 6500 vault lock is nearly 2-1/4" thick. So, we have the thickness of the door that we have measured through the keyhole. We added to that another 3/8" for the glass plate and air gap; and we added another 1-3/4" representing the thickness from the lockcase to the spot between wheels #2 and #3. That makes our drill point 6-1/4" back. Now, bear in mind that this means that our target is 6-1/4" in from the face of the *door*, not the body. If the door sticks out or is recessed, we need to compensate accordingly.

I cannot emphasize too strongly the importance of precise measuring. Precise drill points plus precise measuring plus careful drilling equals a perfectly placed hole. And a perfectly placed hole is the key to a perfect opening. Using a carpenter's square, Arnie and I very carefully measured from the top of the safe down to the center of the dial. We transferred this measurement over to the side of the safe and drew a horizontal line across the side of the body. That line represents dial and wheel center.

Next, again using the carpenter's square, we measured back 6-1/4" from the face of the door and drew a vertical line that intersected the horizontal line we had drawn previously. With a nice big center punch, we made ourselves a crater right at the intersection of the two lines.

With my Hornet set on low speed (1500 RPM) I hand-drilled through the 1/4" thick outer steel skin. Then we hit rocky concrete. To keep our hole straight, we hooked up Arnie's "Schock" rig, and in photograph three Arnie is sailing through the barrier material.

3. Arnie and his "Schock" rig.

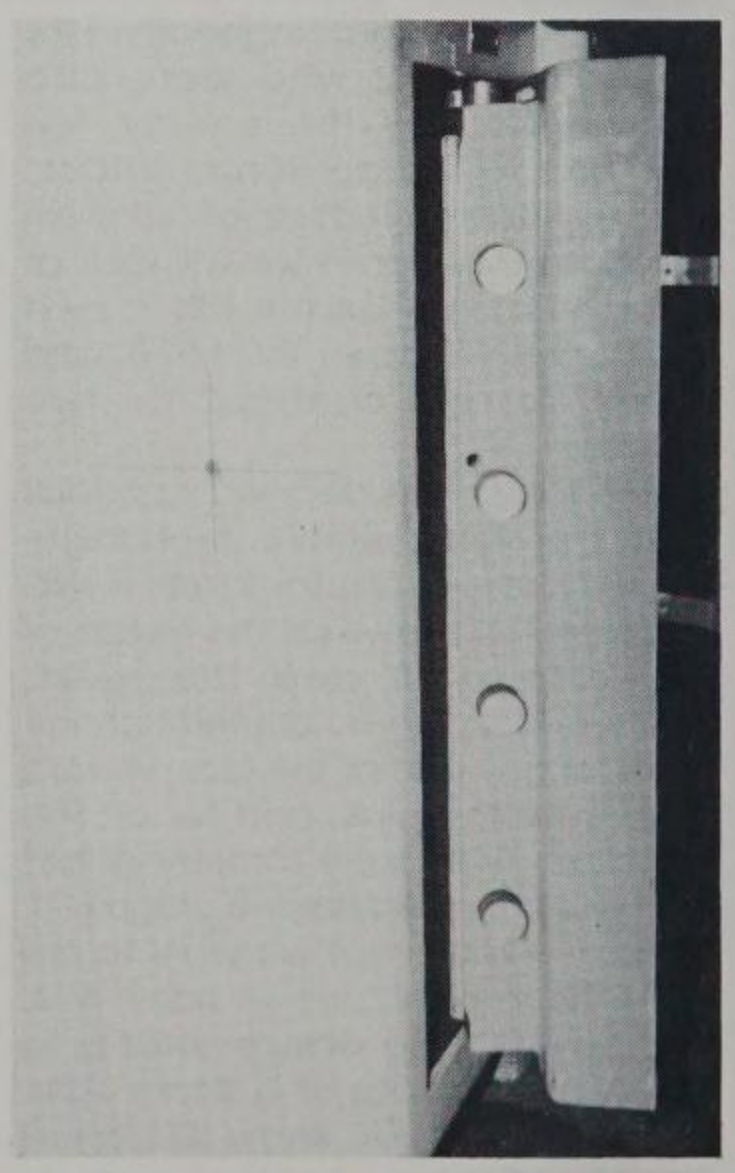
A couple of times we hit some tough rocks or aluminum oxide nuggets, so I got out the mini-sledge and a tough punch, and pounded the devil out of it. (*See photograph 4.*)

4. Pounding to penetrate the safe.

After drilling through the barrier materials, we switched from masonry bits to high-speed steel bits, and penetrated the inner steel of the body. At this point in any side penetration, the drill bit will hit an air pocket—this is the gap between the body and the door. Next we drilled through the steel sidewall of the door and stopped. Peering in the hole, we could see nothing. The vertical boltbar was in the way. So we carefully drilled through the boltbar. Sometimes it can be very tricky when your hole is half on the boltbar and half on air. Take it slow to avoid binding or breaking the bit. Once the boltbar had a hole in it, we took a look.

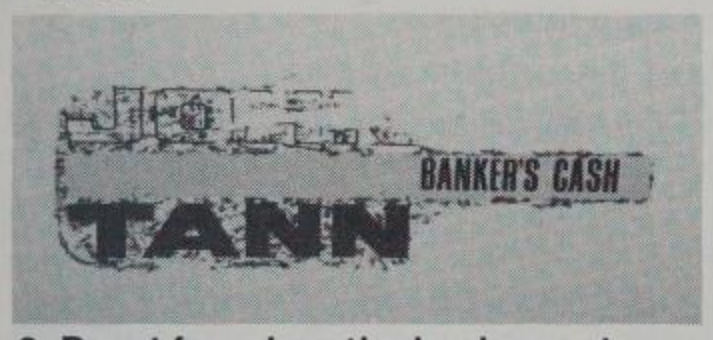
It was right on the money (as usual). We very carefully penetrated the case of the vault lock. Inserting my scope in the hole, I lined up the wheel gates, transferred them over to drop-in, and unlocked the combination lock. Arnie inserted the key into the keyhole and rotated it one turn clockwise. Then we grabbed the handle and rotated it approximately 35 degrees clockwise, and the safe was open. American ingenuity had once again triumphed over British bombast! Obviously I am just kidding. This safe would compare favorably with any safe being manufactured today in the United States. Both Lloyd's of London and the Dutch Rating List would agree with that statement.

Photograph five shows the safe with the door partially open. You can see the hole in the side of the body, and you can also see the hole that



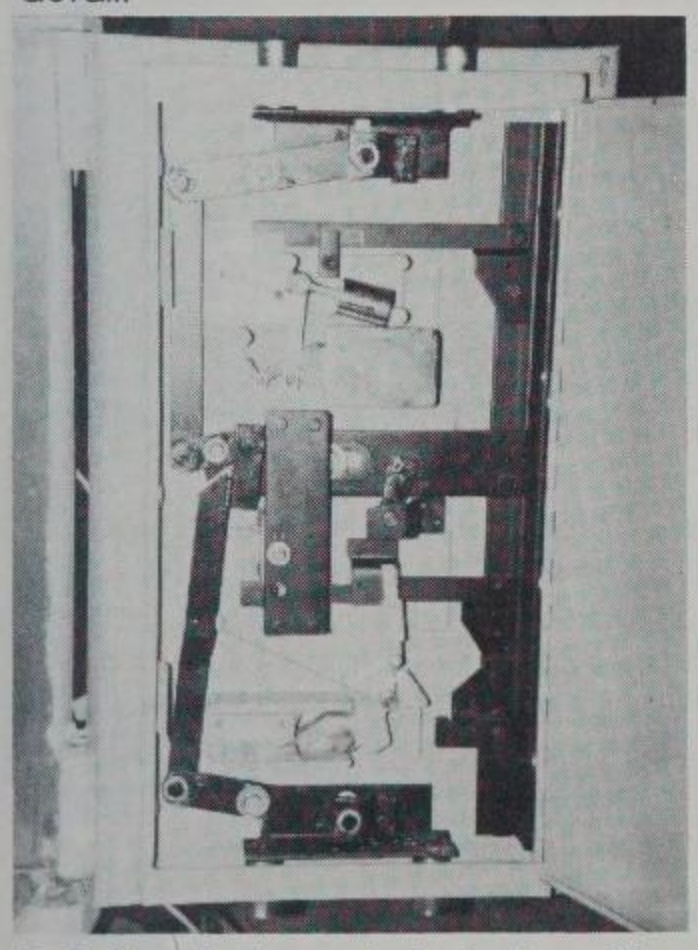
5. Partially open safe. Note hole.

went through the door itself. Notice how close the hole was to one of the side bolts (locking bolts). Photograph six shows the nice decal on the back panel. It is a little worn, but you can still make out "John Tann Banker's Cash." I wonder if they had another model called a Banker's Money Order? Or a Banker's Cashier's Check?



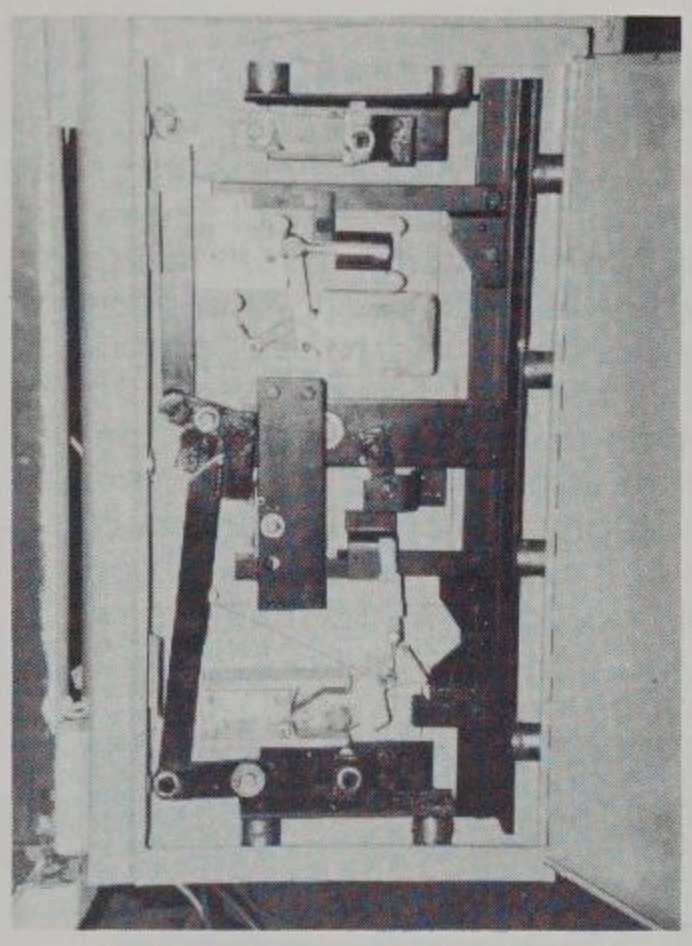
6. Decal found on the back panel.

With the back panel open, we can see the boltwork in the locked position. (*See photograph 7.*) Just above the center of the door, we can see the combination lock. Just below and to the left of center, we can see the strap that covers the keylock. And toward the bottom of the door, we can see a monstrous relocker. In due course we will examine each of these things in detail.



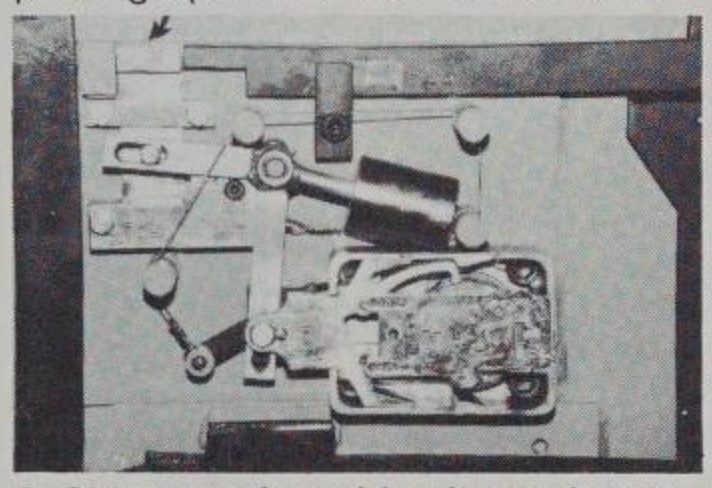
7. Boltwork shown in locked position

In photograph eight, the boltwork is in the retracted position. Notice this is a 3-way boltwork, with locking bolts on the opening side, the top and on the bottom. There are no locking bolts on the hinge side. At first glance it looks like there aren't even any deadbolts on the hinge side; in fact, it looks like the hinge side is a weak link in the chain. Not at all. Although you cannot see it in the photo, the door and body interlock very nicely.



8. Boltwork in the retracted position.

Let's now take a close-up look at the things we glanced at briefly in preceding photographs. In photograph nine we have a close-

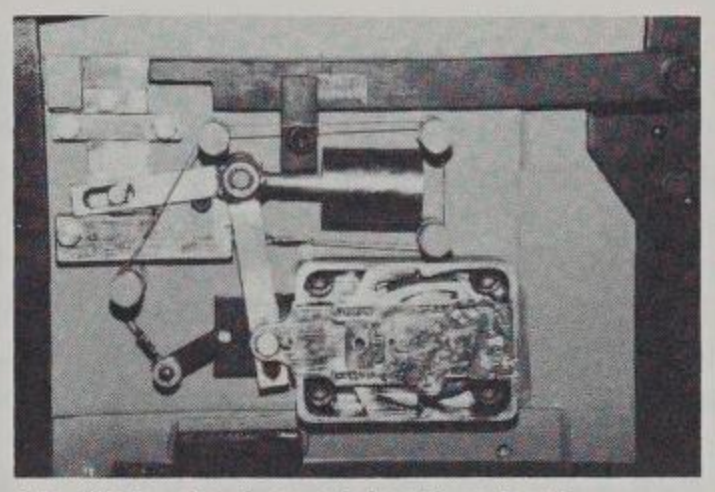


9. Close-up of combination lock area.

up of the area around the combination lock. In this photograph, the lock is in the locked position. The first thing to notice is that there is no glass plate under the lock. Since we had proceeded on the assumption that there was glass, our hole didn't penetrate the lockcase between wheels #2 and #3. Instead, the hole came out in line with wheel #4. But this worked out fine; none of the wheels was able to escape the eye of Olympus! In our favor was the nice fat target we were aiming for. We would have had to have been *way* off to miss the lock entirely.

Look way up in the left hand corner of photograph nine. You will see an arrow. The arrow is pointing to the lockbolt extension that is controlled by the combination lock. Yes, that's right. Through a series of connections and linkage, the combination lock controls extension piece way up in the corner. And that extension is what is actually doing the blocking of the boltbar.

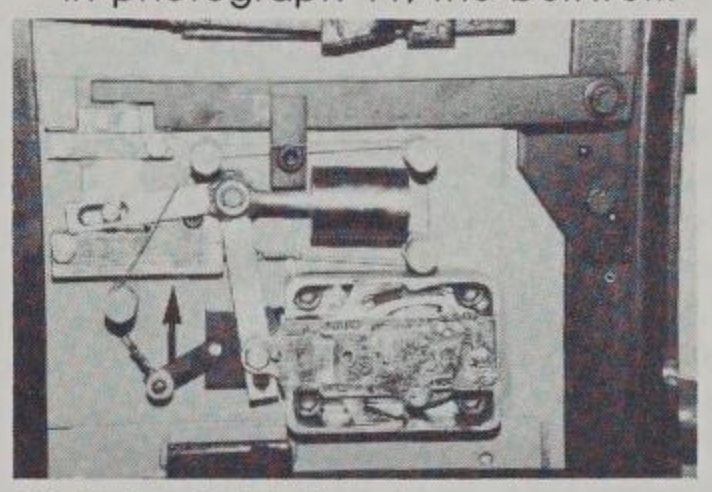
In photograph 10, the



10. Unlocked combination lock.

combination lock has been unlocked. When the lockbolt of the combination lock was retracted, it lifted the counter-weight above the lock, and retracted the lockbolt extension way up in the corner. Notice that in this position, the extension up in the corner no longer blocks the boltbar.

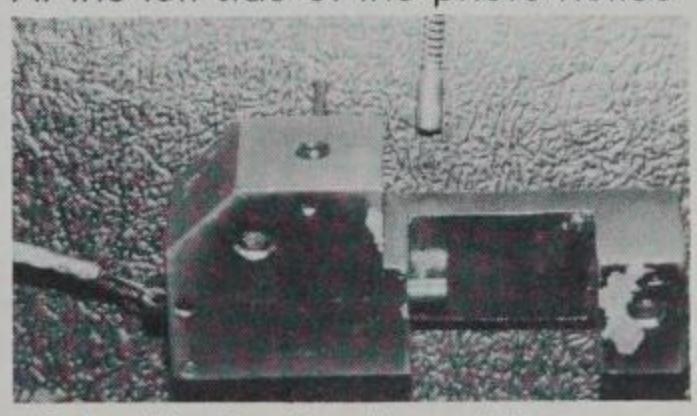
In photograph 11, the boltwork



11. Retracted boltwork.

has been retracted. You can clearly see the boltbar has been retracted—it is now on top of the lockbolt extension. Notice how the position of the lever in the vault lock has changed from photograph nine. You may be wondering what the purpose of that big counter-weight is. I am not absolutely sure, but I believe that it is to make throwing the lockbolt of the combination lock easier. Without the counter-weight, I suspect the all that linkage attached to the lockbolt of the vault lock would be more likely to bind.

Photograph 12 shows the guide for the lockbolt extension. In this guide is one of the most dastardly relockers ever invented. To alleviate any confusion, I should point out what and where this relocker came from. Look back at photograph 11. At the left side of the photo notice



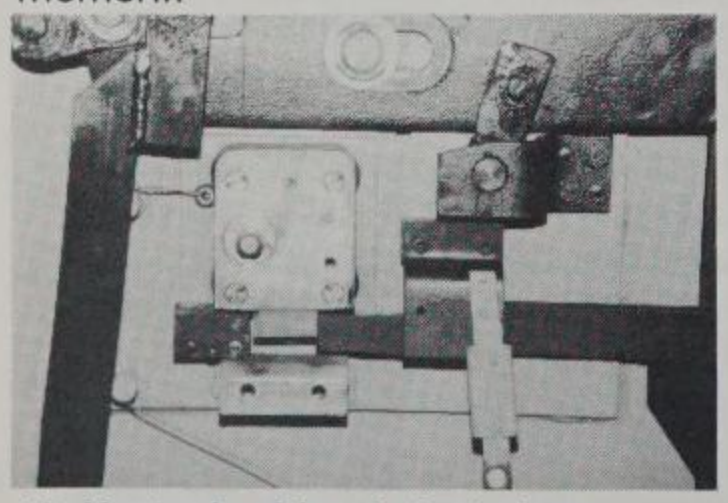
12. Lockbolt extension guide.

the steel block that guides the lockbolt extension up and down. That is the piece we are examining in photograph 12. In photograph 12 it has been removed from the door and turned around. The channel, or slot, on the right of the guide is where the lockbolt extension rides as it goes up and down. Notice the little pin that is sticking into the slot. That little pin is the relocker. The relocking pin is held by the cable at the left of photograph 12. (If you look back at photograph 11 you can see the cable looping all over the place—it ends up in the guide).

At the top of photograph 12 is the crosslocking pin and spring. This is the dastardly part. If the relocking pin is set off, the crosslocking pin drops into a groove in the relocker and prevents it from being pulled back. In other words you cannot grab the cable and pull back the relocker because the crosslocking pin is preventing the relocker from moving.

A word of warning: during routine service, do not, I repeat do not set the relocker off just for the hell of it. Why? Because resetting it is more work than you want to go through if you are not getting paid for it. It is a real pain.

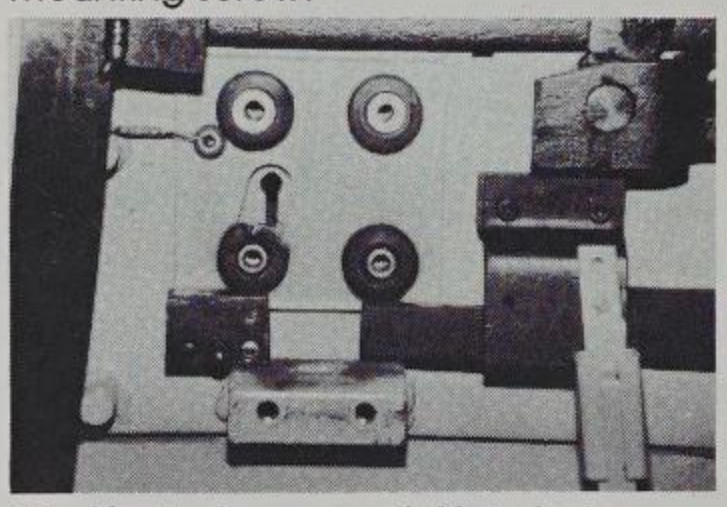
In photograph 13, the steel strap that was covering the keylock has been removed. You might compare this photograph to photograph 7 if you want to see exactly where we are. This is one of the better keylocks you will find in any safe anywhere. On this safe this 10-lever keylock is mounted VD, and there is a glass plate between it and the door. If you look just to the left of the keylock, you will see the cable attached to the glass plate. This cable runs down to the relocker we will discuss in a moment.



13. Keylock without steel strap.

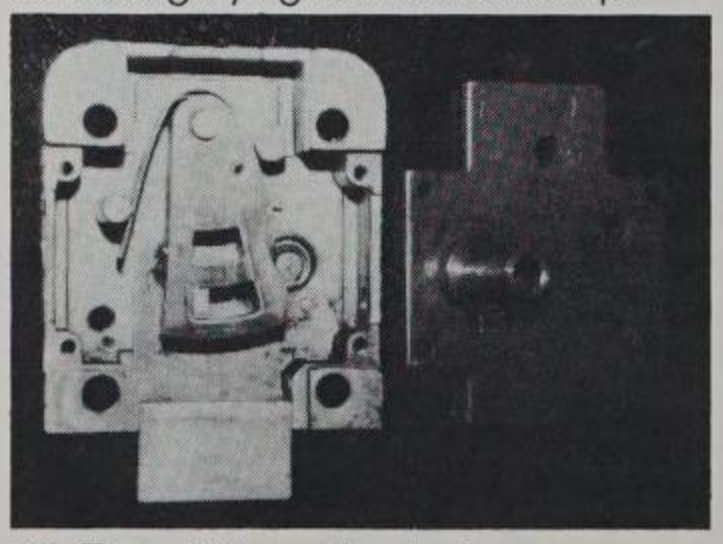
I have never had to drill for one of these keylocks, but it seems to me that the best shot at it is through the hinge side. It would be a little tricky, having to come in between the boltbar and the cable, but I think it could be done. What you would try to do is drill off the stump. More about that in a bit. One more thing needs to be said about photograph 13. Notice the block to the left of the lockbolt of the keylock. This is for side-punching resistance, and it looks to be extremely effective.

Photograph 14 was taken with the keylock removed. We can see the glass plate. Notice the elongated hole in the glass; this one hole does double duty: it provides the hole for the key, and also for the lower left mounting screw.



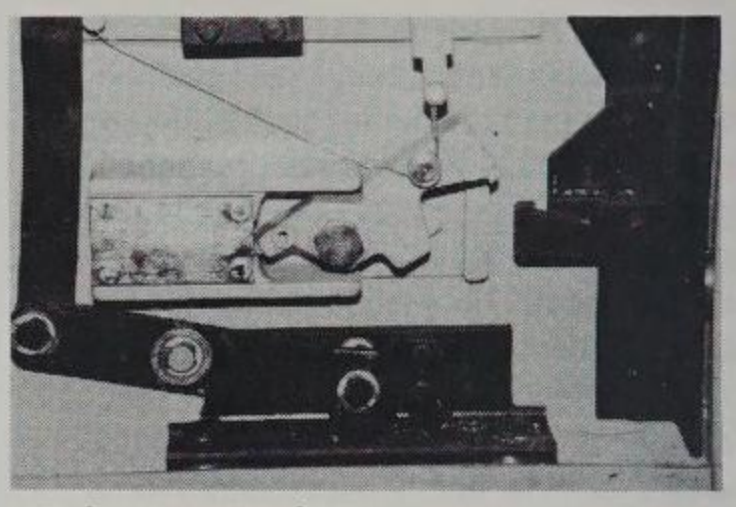
14. Keylock removed. Note hole.

Photograph 15 is of the high-security Tann 10-lever keylock. In this photograph the cover has been removed to give us a look inside the keylock. To the right of the keylock is the cover. The long tubular piece is the curtain, which deters picking attempts. Notice that the stump is actually enclosed in the levers. In fact, the stump (fence) is always inside the levers, and never leaves its home inside the levers, not even when it is unlocked. It just moves from one part inside the levers to another part inside the levers. When you are side-drilling the keylock to remove the stump, it is helpful to know that you are going to have to drill though the levers to get to the stump. If you did not know that ahead of time, it could be very confusing trying to find the stump!



15. Tann 10-lever keylock.

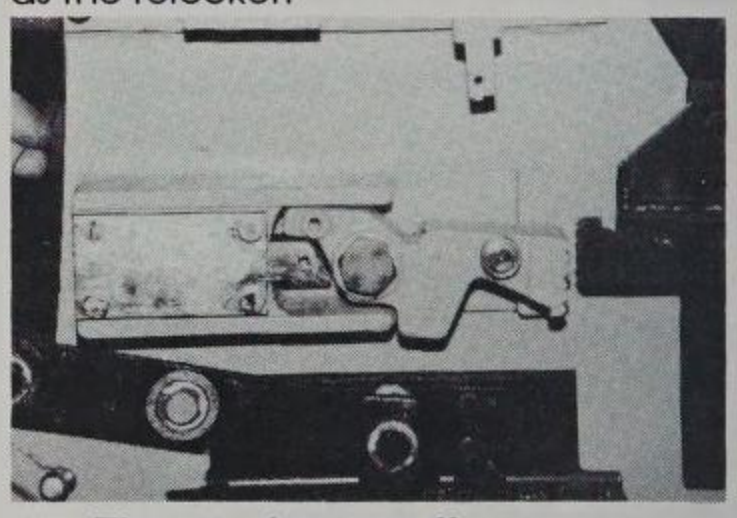
In photograph 16 we have the biggest of the biggies. That is one humongous relocker! It is held in check by the cable attached to the glass under the keylock. The other



16. Large relocker.

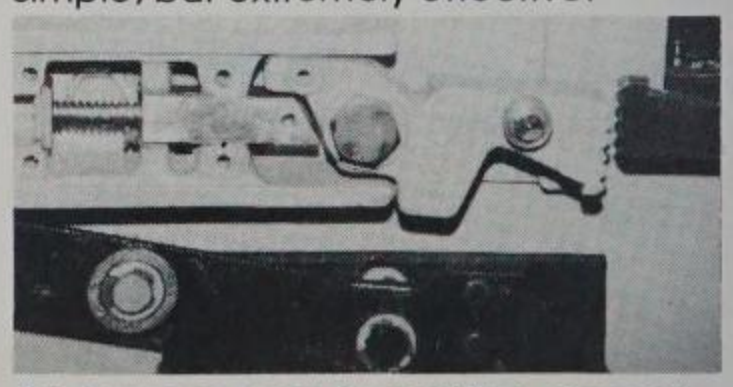
end of the cable runs in back of the boltbar (see photograph 13). This means that the relocker can be set off 1) by any attack on the keylock which breaks the glass, 2) by attempting to punch the boltbar back far enough to bypass the lockbolt of the keylock, or 3) by a thermal lance attack. In photograph 16, the relocker is in the normal position—it is not set off.

In photograph 17 I have set the relocker off. I cannot conceive of anyone trying to side-punch the boltwork with that gigantic relocker set off. At the left of the relocker you will see the biggest crosslock in history; heck, the crosslock is as big as the relocker!



17. The relocker set off.

In photograph 18 I have removed the cover from the crosslock, to give us a close-up of its innards. As you can see, it is pretty straight forward. The spring is constantly trying to push the crosslock out, but the crosslock can only get out if the relocker fires. Simple, but extremely effective.



18. Cover removed providing close-up.

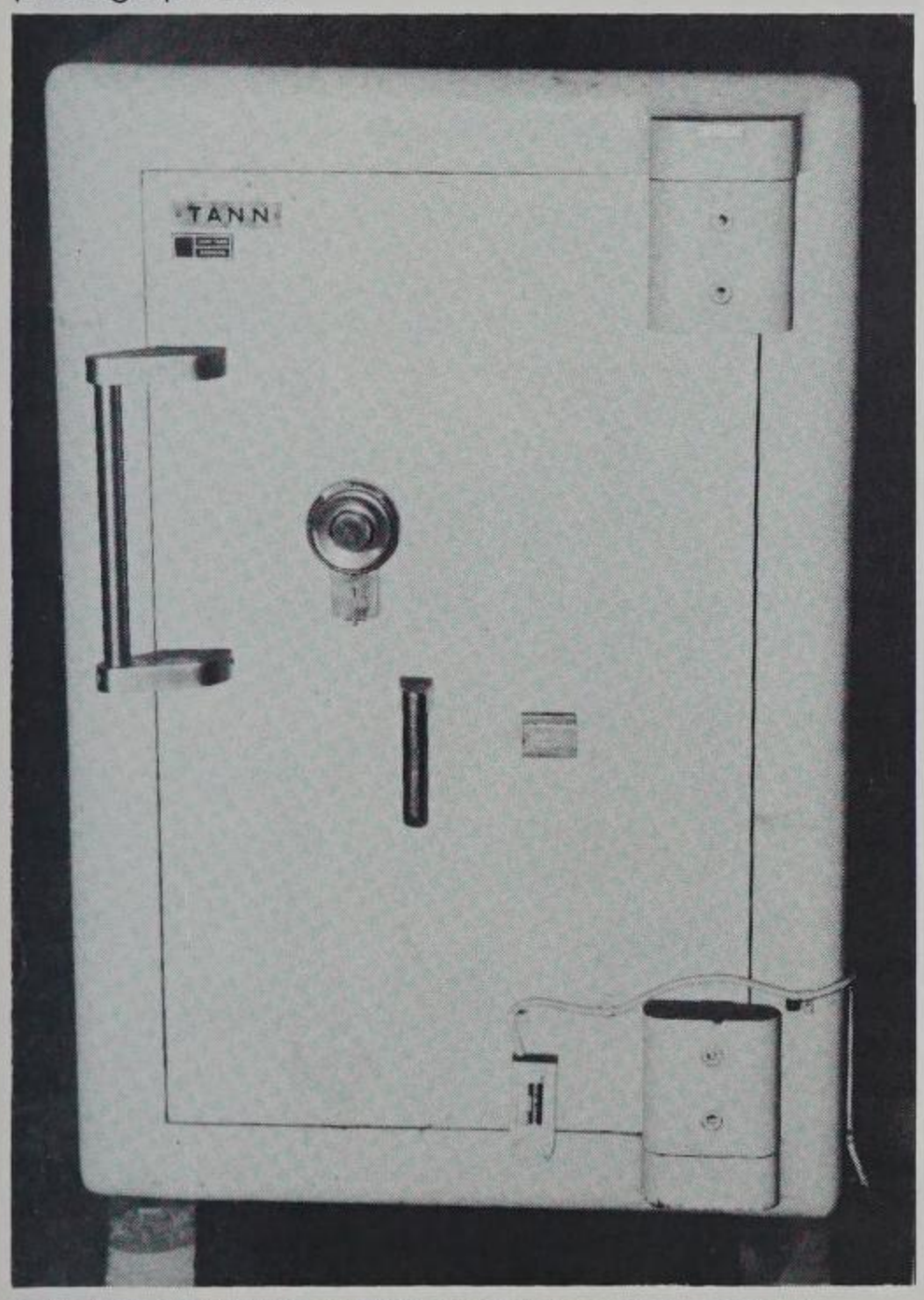
Well, that wraps up our tour of the older model Tann Banker's Cash MK-7. Next month we will take a look at its successor, the newimproved MK-8. The battle between British armor and American armor piercers will continue! See ya next month. §

by Dave McOmie

Banker's Cash MK-8 Safes

You hit a tough one here and there, but usually high security safes are not that hard to drill."

Last month Arnie and I opened the old-style John Tann Banker's Cash MK-7. This month we are going to tackle the newer-style Banker's Cash MK-8 shown in photograph one.

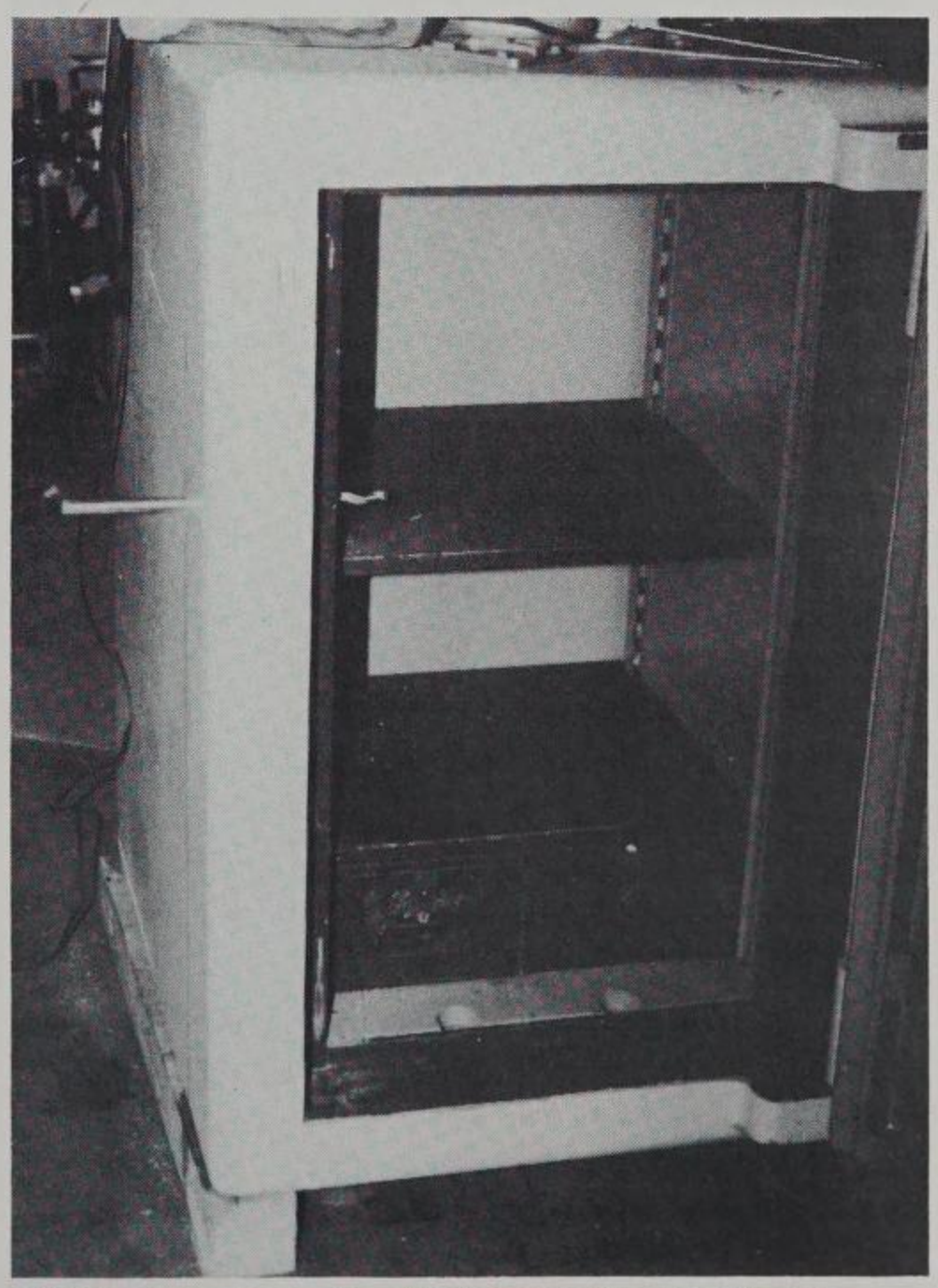


1.This Banker's Cash MK-8 is this month's subject.

If you will remember, last month we side-drilled the MK-7 6-1/4" back from the face of the door. We had expected a glass plate, and since the safe did not have any glass, the hole came in a little farther back then we would have liked. Thank goodness vault locks are thick little mothers, otherwise our hole might have missed the lock! Another thing that worked in our favor was the 1/2" hole that we drilled through the body and door. This allowed us to insert a 1/4" drill bit in the 1/2" hole and angle it off toward the lock.

On this month's safe, we were certain there was glass, so we kept the same measurement. This time I wanted to drill the safe free-hand, without a rig. So I fired up my Makita HP-2010N and muscled my way through the barrier material in the side of the body in about 15 minutes.

One of the biggest frauds that has been perpetrated on locksmiths and safemen is the idea that putting a hole in a high-security safe is next to impossible. What a bunch of baloney. You can hit a tough one here and a tough one there, but by and large high-security safes are no more difficult to drill than medium-security safes. The reason to be wary of drilling high-security safes is NOT the difficulty of drilling, but rather the complex mechanisms and proper tools and techniques required to do the job right. You have to be familiar with side and top-drilling techniques. You have to have high quality drill motors, long drill bits and long borescopes. And you must have photographs and information. Guessing or winging it on an X-6 is foolish at best, and economically disastrous at worst. Who wants to buy a $10,000 safe that they have



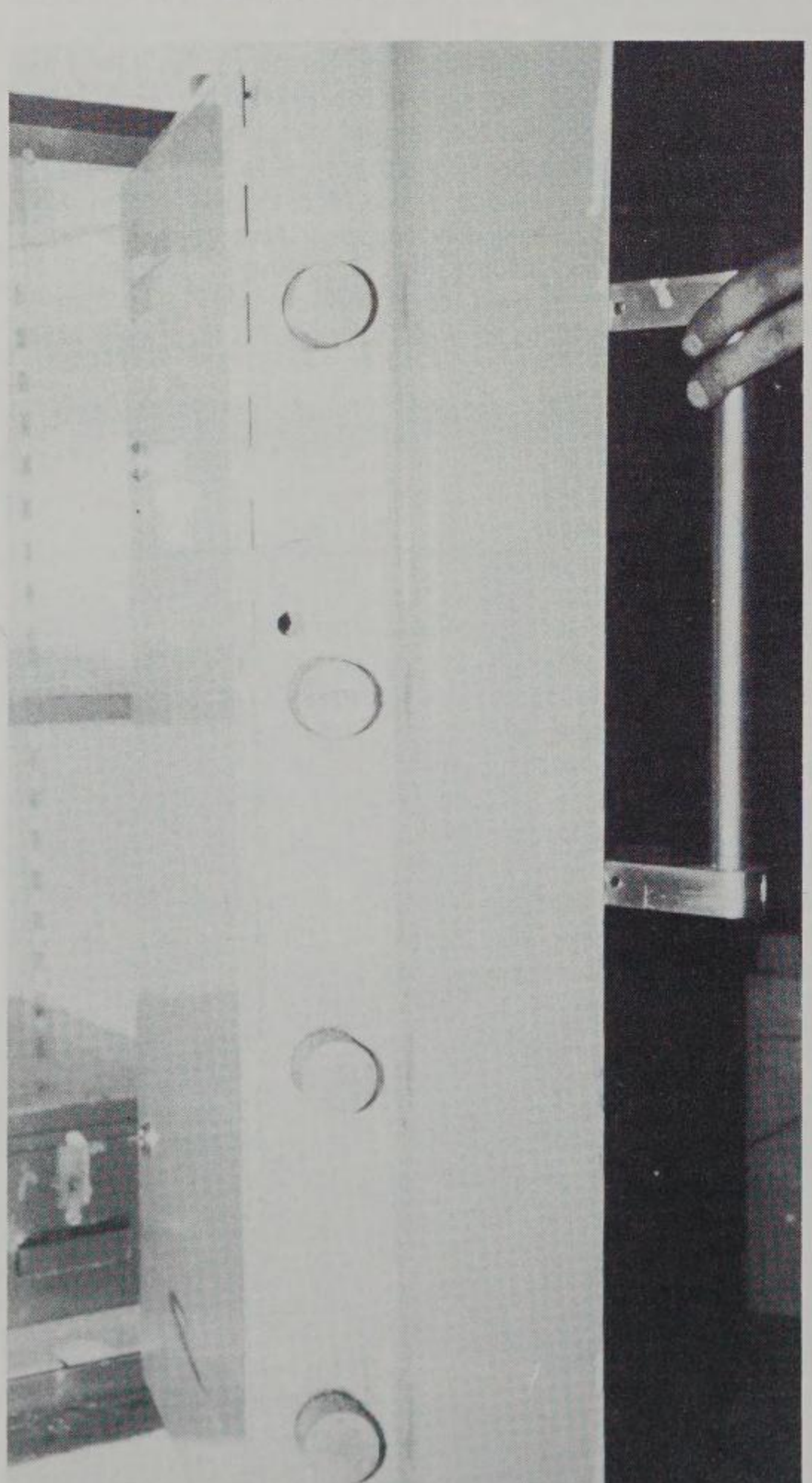
2. This view shows the drill through the MK-8's side.

botched? (Of course, my favorite tool is my *Guide to Opening High Security Safes*, available through this magazine!)

With that off my chest, let's continue. After drilling through the body, door and vertical boltbar, we could see the side of the vault lock sitting there, just waiting for a drill bit to penetrate it. A hole was drilled in the side of the vault lock, and a scope was inserted to read the wheel gates, and presto, the safe was open.

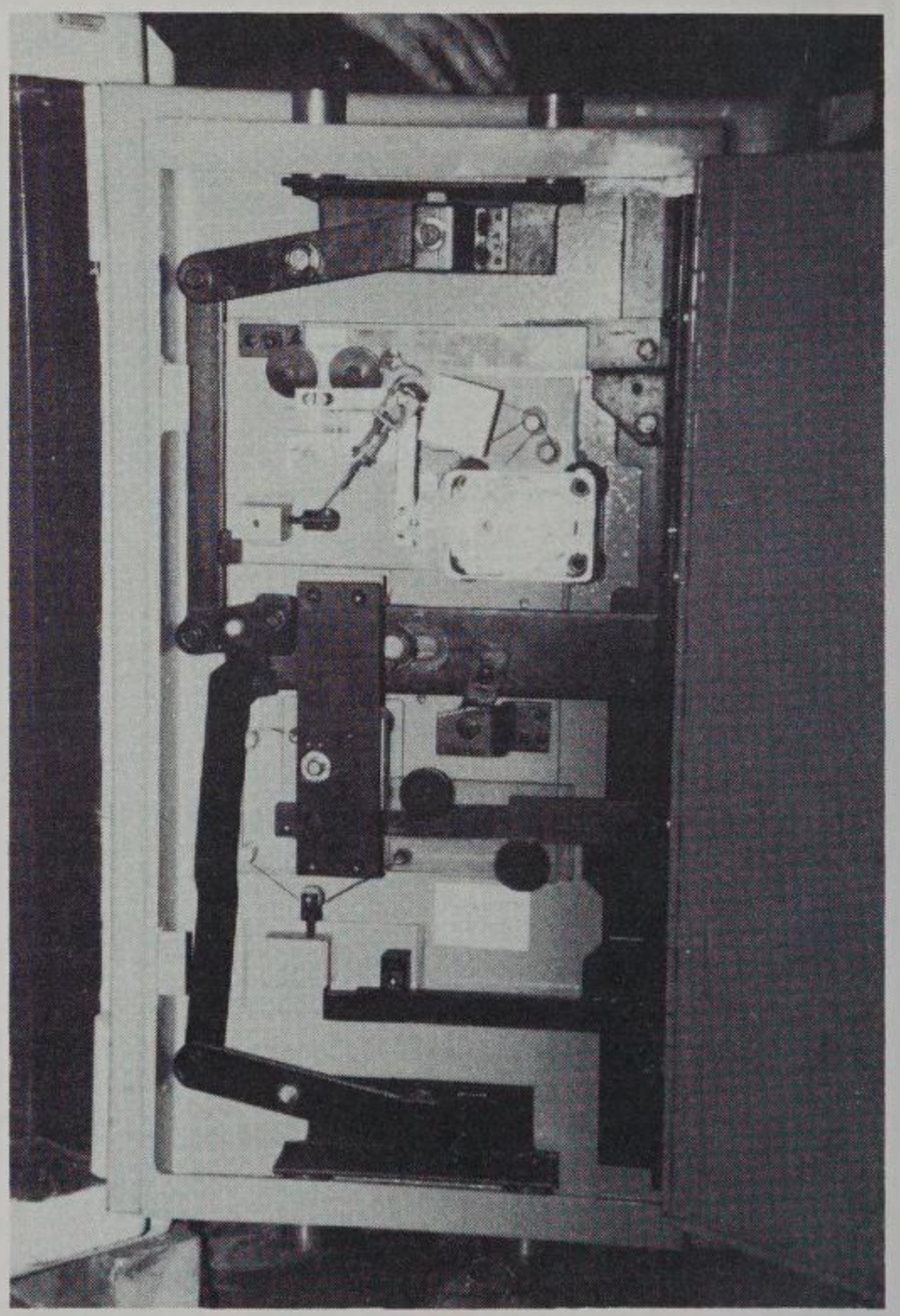
Photograph two is a trophy picture, showing the drill bit sticking through the side of the MK-8. I should point out that although the two banker's safes that Arnie and I drilled were painted white, most Banker's safes came from the factory a deep, dark blue.

In photograph three we have a side-view of the door, showing the four locking bolts on the opening side. For your information, the measurement from bolt center to bolt center is 7-5/8". The depth from the face of the door to bolt center is a hair under 5". If you look closely at the photograph, just above the second bolt down you will see the hole that opened the safe.



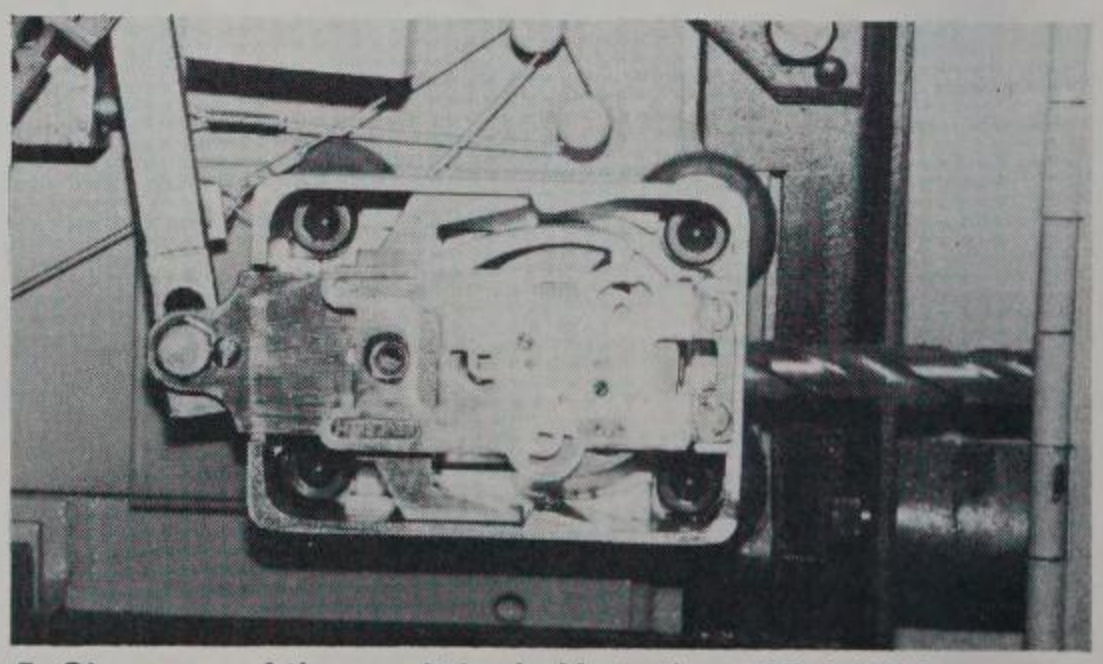
3. Side view of the door showing four locking bolts.

In photograph four the hinged back panel has been swung open, exposing the inside of the door to our scrutiny. In this photo the boltwork is in the extended or locked position. I don't know if it will come out in the photo, but to the right of the combination lock you will see the vertical boltbar that controls the locking bolts on the opening side of the safe. This is the boltbar that had to be drilled through to give us access to the lock. And if it comes out in the photo, you will be able to see the hole that was drilled in the edge of the boltbar. It is the shiny part of the boltbar at the height of the lock. Once again, this is a 3-way boltwork, with locking bolts on the top, bottom, and opening side.



4. Exposed inside of door. Note boltwork is extended.

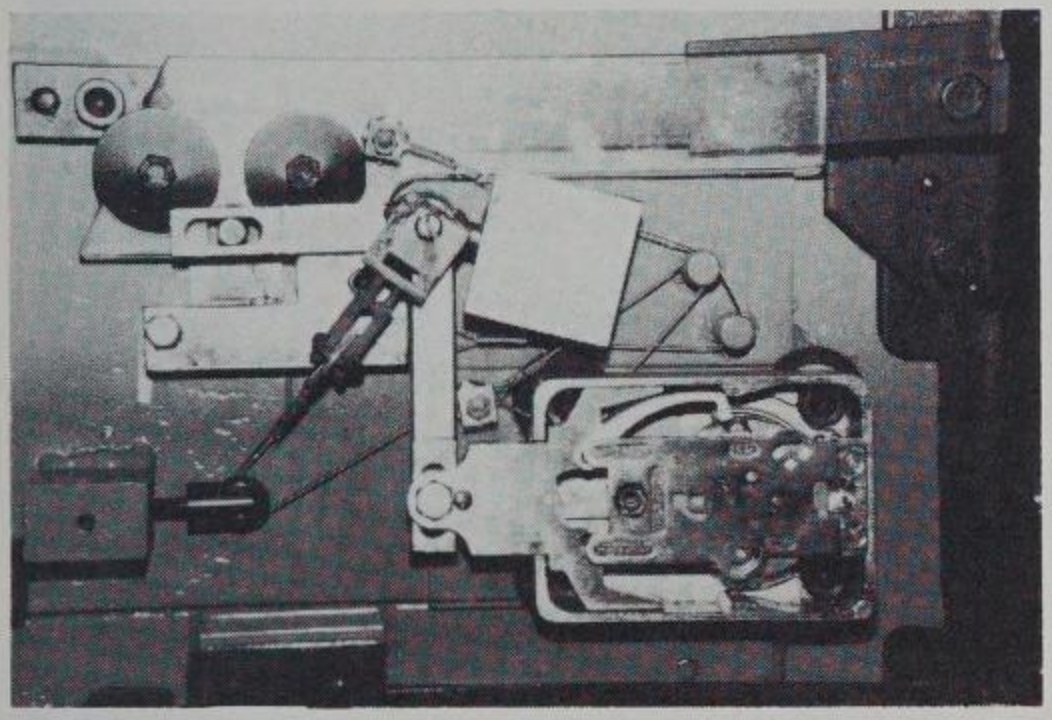
Photograph five is a close-up of the vault lock with its back cover (LOBC) removed. This is another trophy



5. Close-up of the vault lock. Note the 1/2" drill bit.

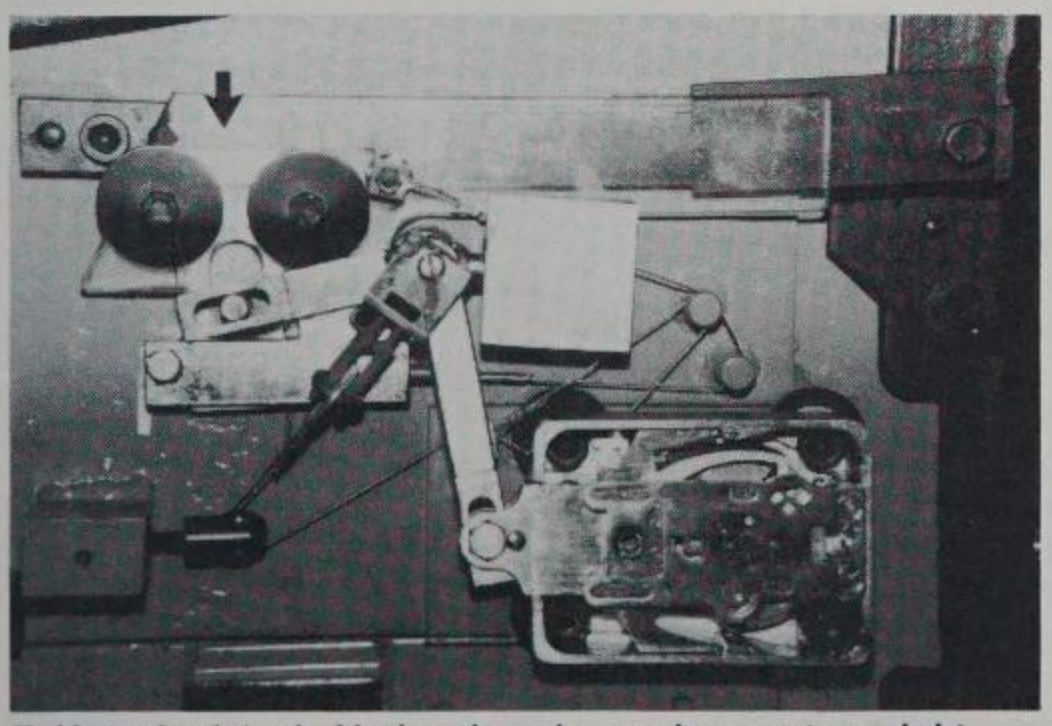
picture—notice the 1/2" drill bit against the lock. Although a 1/4" bit was used to penetrate the lock, the 1/2" bit did all of the hard work, so I rewarded it with the publicity that its skinny brother usually gets. Besides the 1/4" bit wouldn't fit properly in the hole in the edge of the boltbar. There is glass under this lock, as you can tell by the four rubber grommets between the lock and door. You can see the edge of the glass just to the left of the lockbolt.

In photograph six, we have backed up a little to get more things in the picture. The most important addition to this picture is the long glass plate that protects the boltbar above the combination lock. On older models, like the one we looked at last month, you could conceivably drill above the lock and punch the boltbar back far enough to bypass the lockbolt extension. As a counter-measure Tann installed a glass plate and an additional relocker. The added relocker is about six inches to the left of the lock, and is controlled by a cable attached to the glass plate above the lock. In this photograph, the lock is in the locked position.



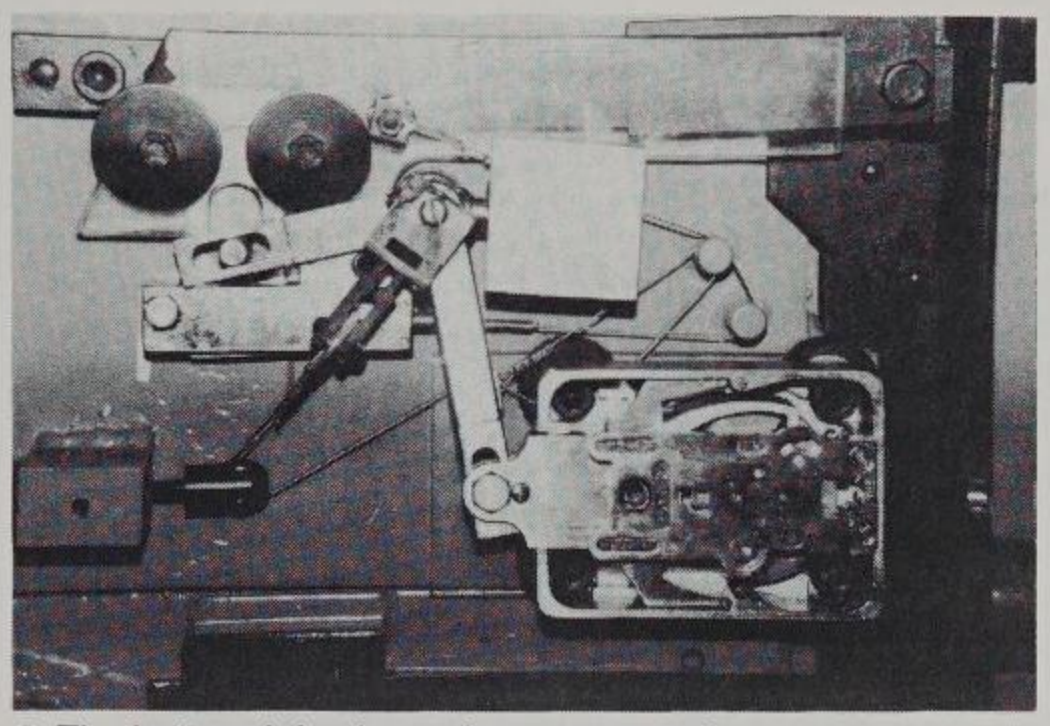
6. Wider view of the vault lock. Notice the the glass plate.

In photograph seven the lock has been unlocked, retracting the lockbolt extension designated by the arrow. Notice the changed position of the counter-weight. And also notice that Tann changed the shape of the counter-weight. The counter-weight in the MK-7 we opened last month was round, whereas this one is rectangular. I haven't a clue why.



7. Unlocked, lock .Notice the change in counterweight.

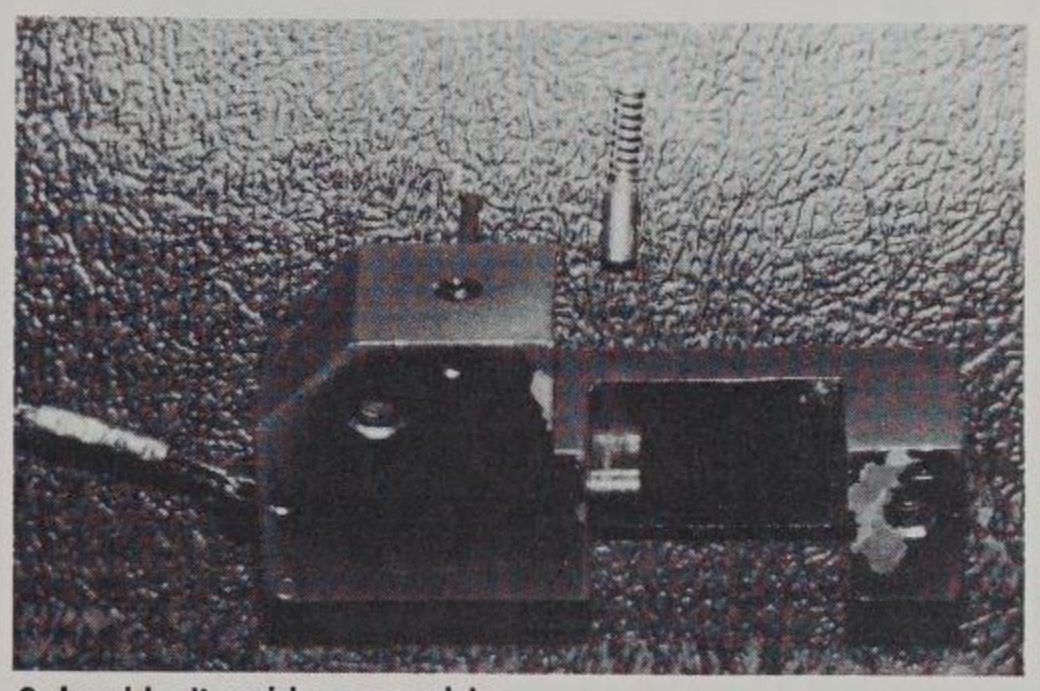
In photograph eight the boltwork has been retracted. If you can see through the glass, you will notice that the boltbar has passed over the top of the retracted



8. The boltwork is shown here, retracted.

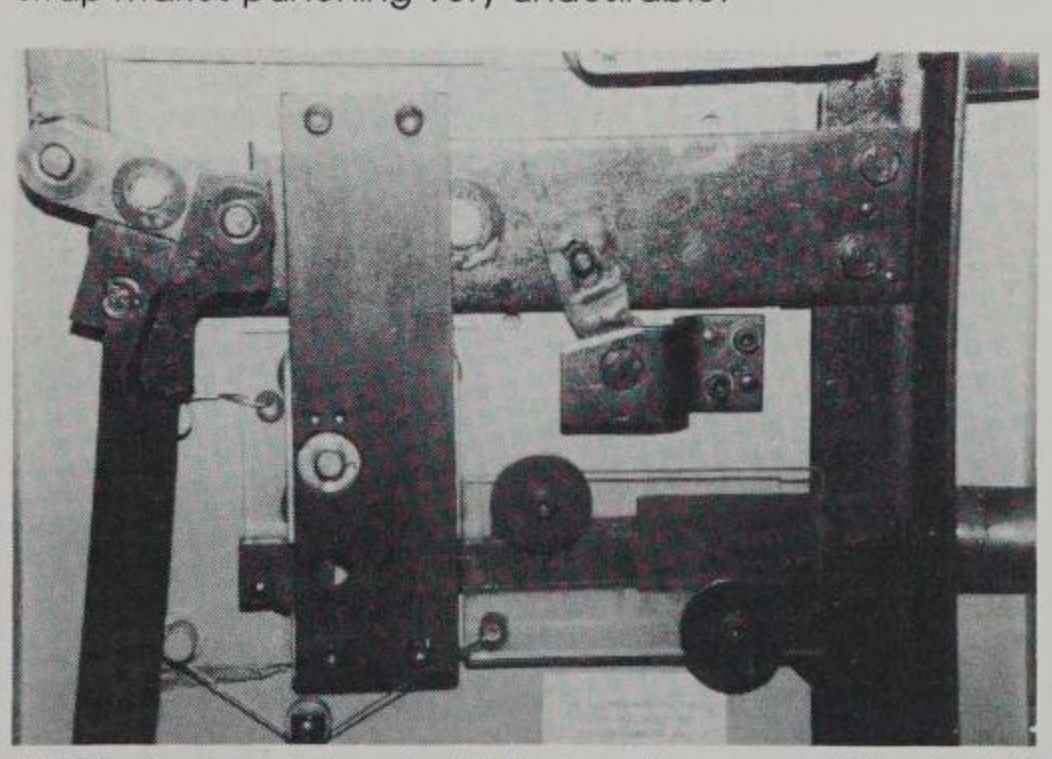
lockbolt.

The MK-8, like the MK-7, also has a dastardly relocker in the lockbolt guide assembly. (*See photograph 9.*) It is identical to the one discussed last month.



9. Lockbolt guide assembly.

Photograph 10 puts us in the vicinity of the keylock. In this photo we cannot see much of the keylock because there is a long, wide steel strap blocking our view. This strap makes punching very undesirable.

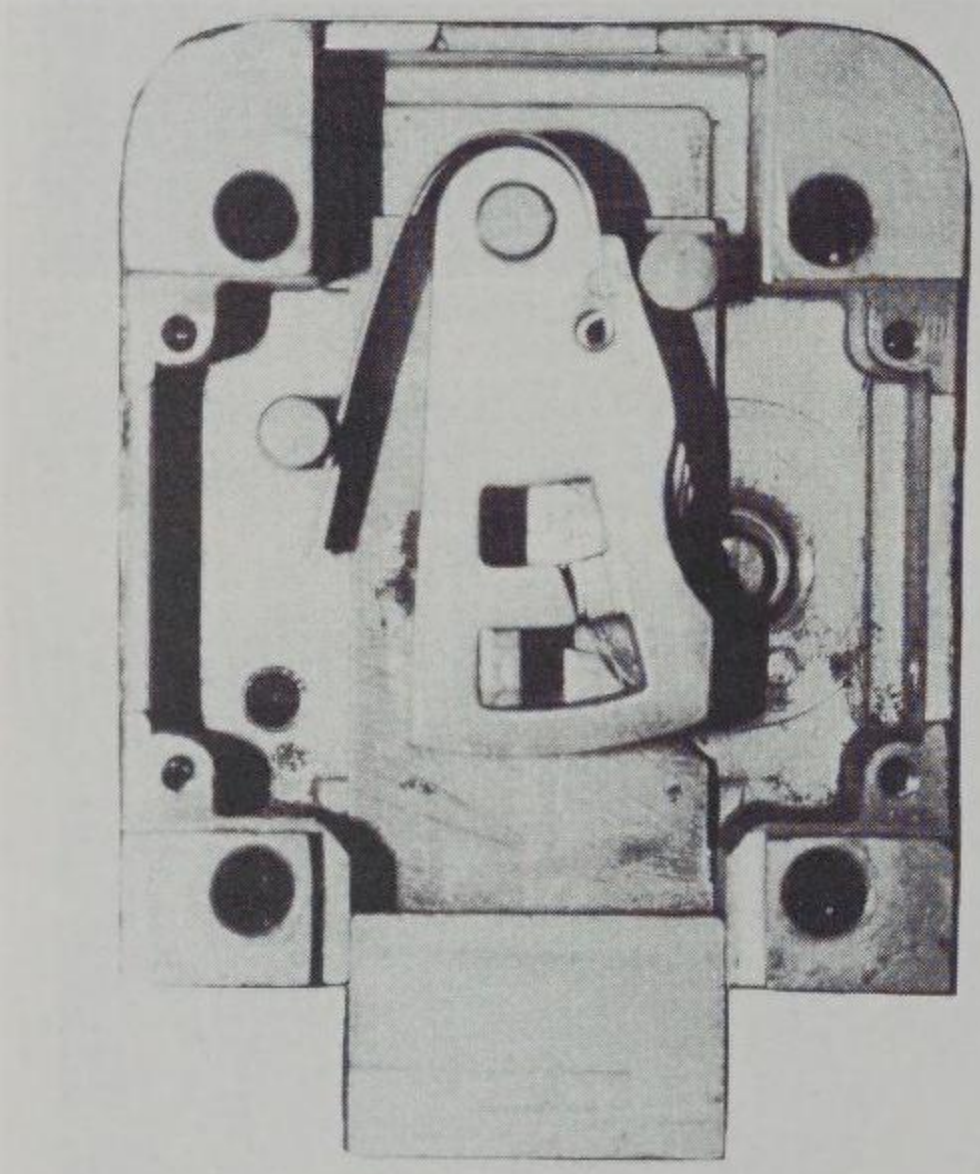


10. The keylock is barely visible here because of the steel strap.

Notice the extra piece of glass to the left of the keylock. This piece is to protect against punching the part of the boltbar that the lockbolt of the keylock blocks. This glass plate performs the same function as the glass plate above the combination lock that we looked at a few photographs back. Punching the boltbars back

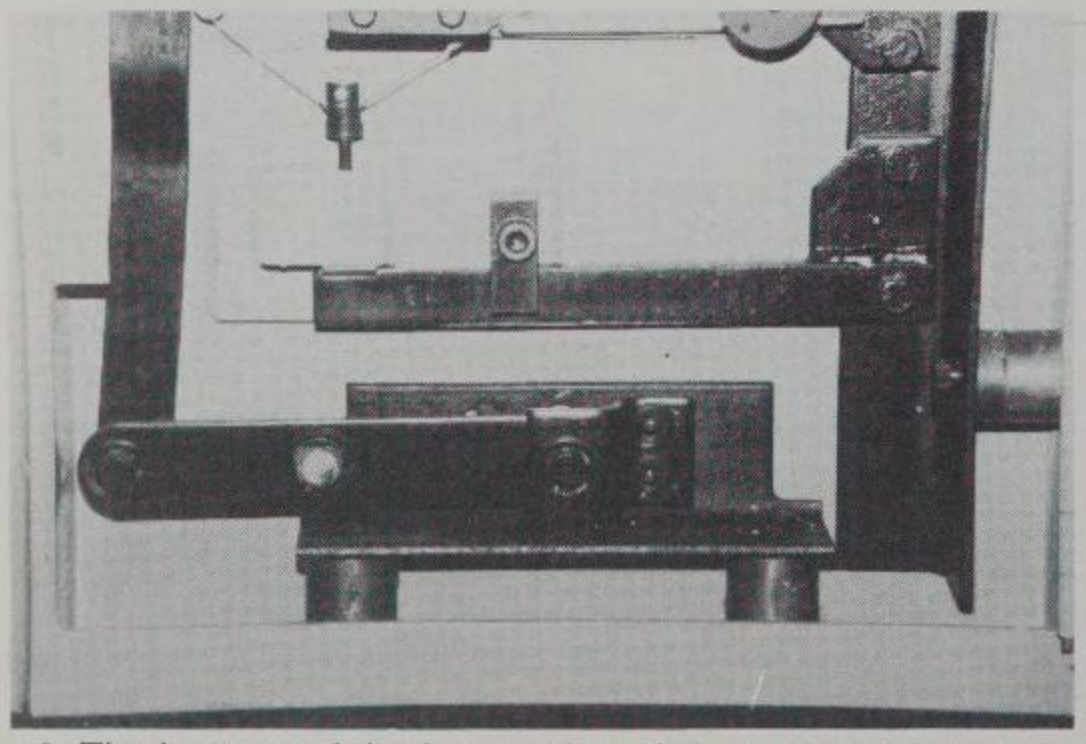
far enough to clear the lockbolts is out of the question, because it would set off at least two relockers.

Photograph 11 is of the high-security 10-lever keylock used exclusively by Tann. This keylock is identical to the one discussed last month. There is a curtain to deter picking attempts. And notice that the stump is inside the levers. The key turns clockwise to open. There is a screw that controls whether or not the lock is key-removable. The lock is mounted vertical down.



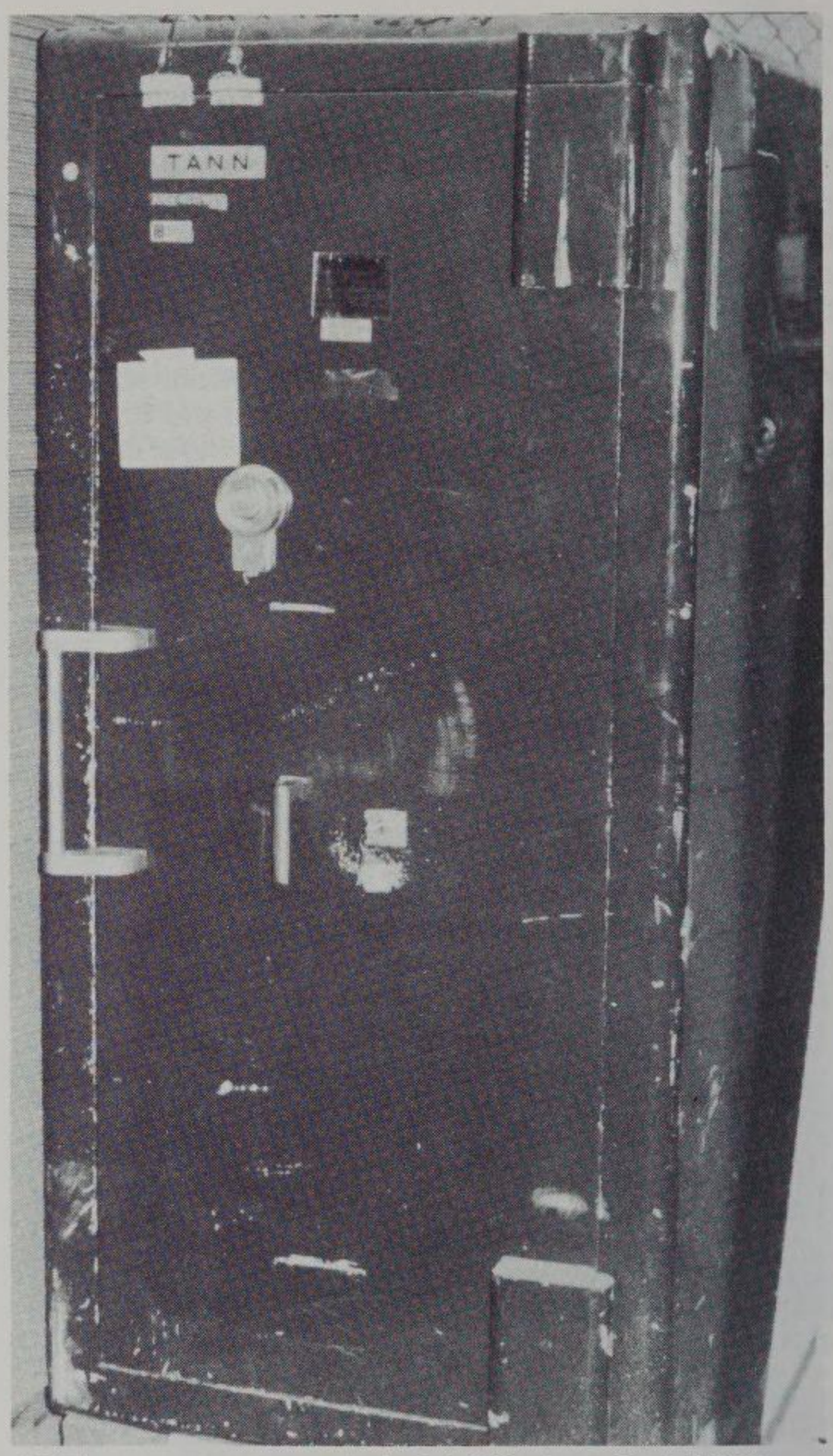
11. Tann's high-security 10-lever keylock.

Photograph 12 shows us the bottom of the boltwork, and most importantly the lower relocker controlled by a cable attached to two glass plates. Yep, that is right: TWO glass plates. One end of the cable is attached to the glass plate under the keylock; the other end is attached to the glass plate under the boltbar next to the keylock. If either glass plate is broken, off goes the relocker and on goes your drill motor!



12. The bottom of the boltwork and the lower relocker.

With our examination of the little MK-7 and MK-8 complete, let's now look at a more popular size Bankers. Shown in Photograph 13 is a Bankers Cash MK-8 that stands about six feet tall. This is by far the most common

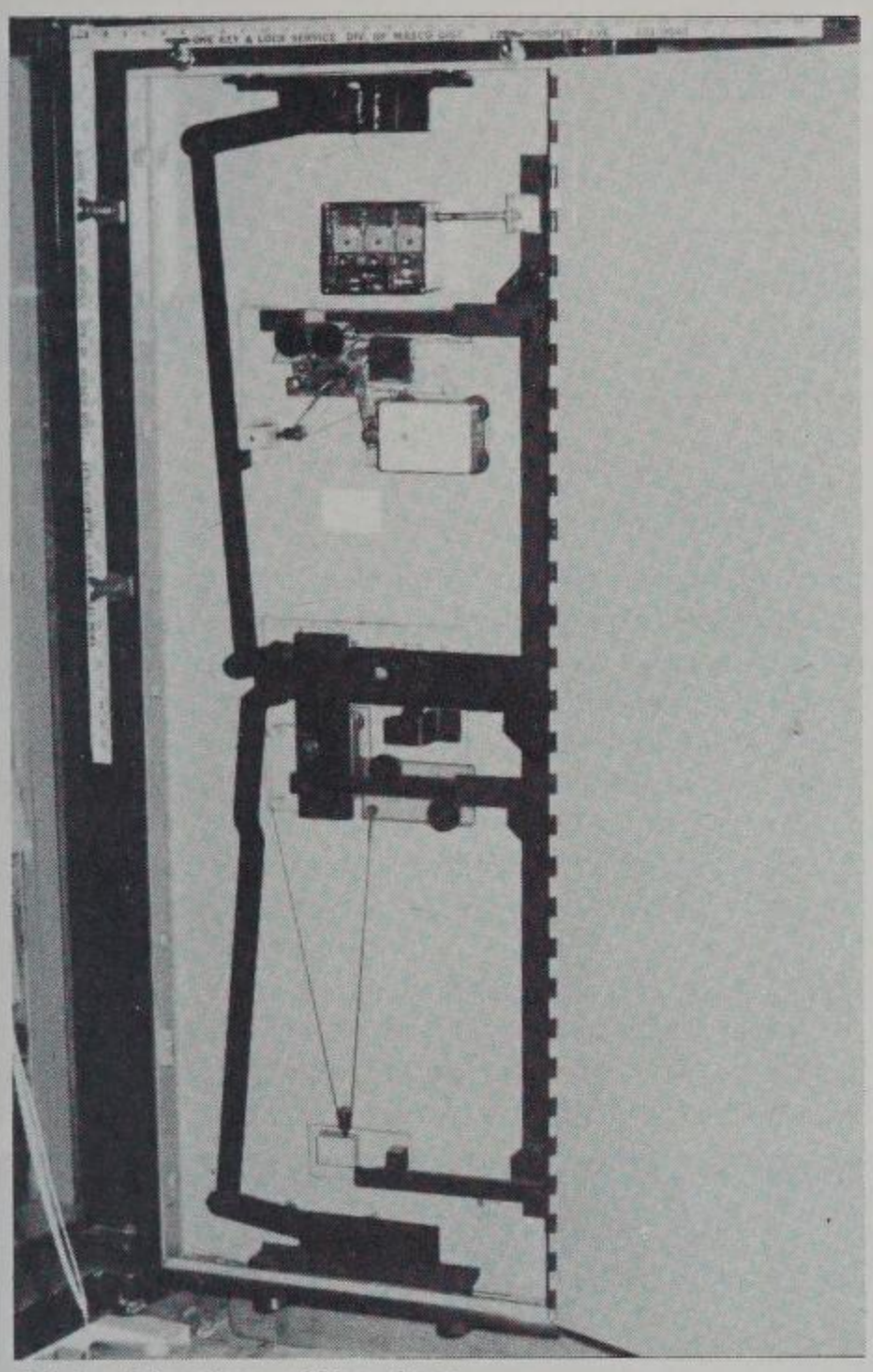


13. The more common six foot tall Bankers Cash MK-8.

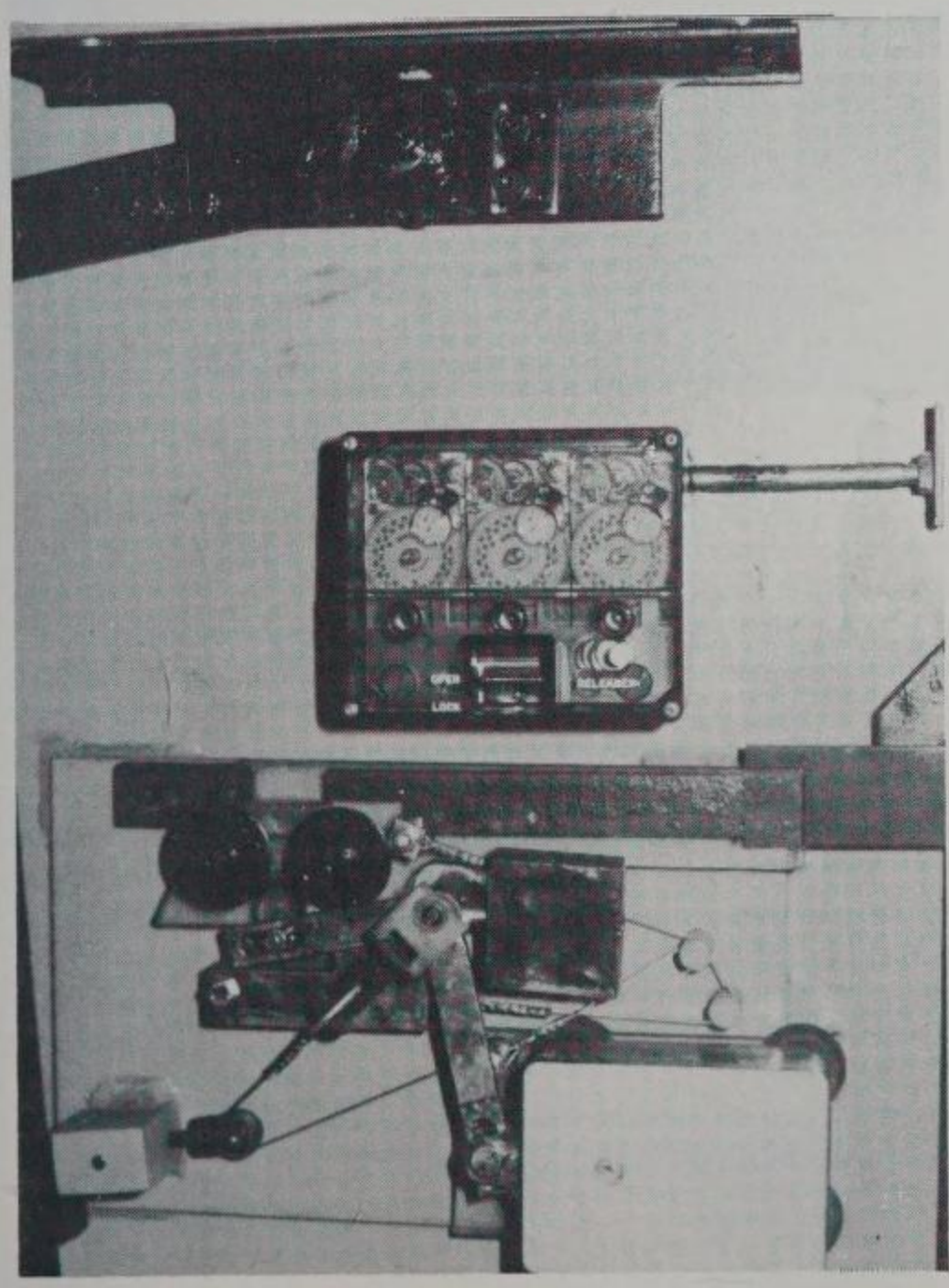
size of Bankers safe you will see in the field. Notice the L-handle, and the position of the dial, handle, and keylock escutcheon. This is the way to identify a Banker's Cash safe. If it does not have an L-handle, it probably is not a Bankers; and if the configuration of the dial, handle and escutcheon is radically different from this, you do not have a MK-7 or MK-8. This means that the lock and boltwork are radically different.

Photograph 14 gives us an inside view of the door. Notice that the basic layout is the same as the smaller safe we looked at. The only noteworthy difference is the timelock added to this safe.

Photograph 15 takes us in for a close-up of the area around the lock and timelock. The lock is the same, the glass plates are the same, the relocker is the same, the linkage is the same—every significant part is the same on this safe as the smaller one we just looked at. The only thing that I can see that is different is the angle of the relocker. On the smaller safe, the relocker was perfectly horizontal; on this safe it angles down a little. Not a big deal. On a model this large, the easier way to beat the relocker at the lower left of this photo is to drill for the vertical boltbar that it blocks. The long vertical boltbar is very flexible, and if you push in, it will bend in far enough to bypass the little relocking pin that is trying to block it.



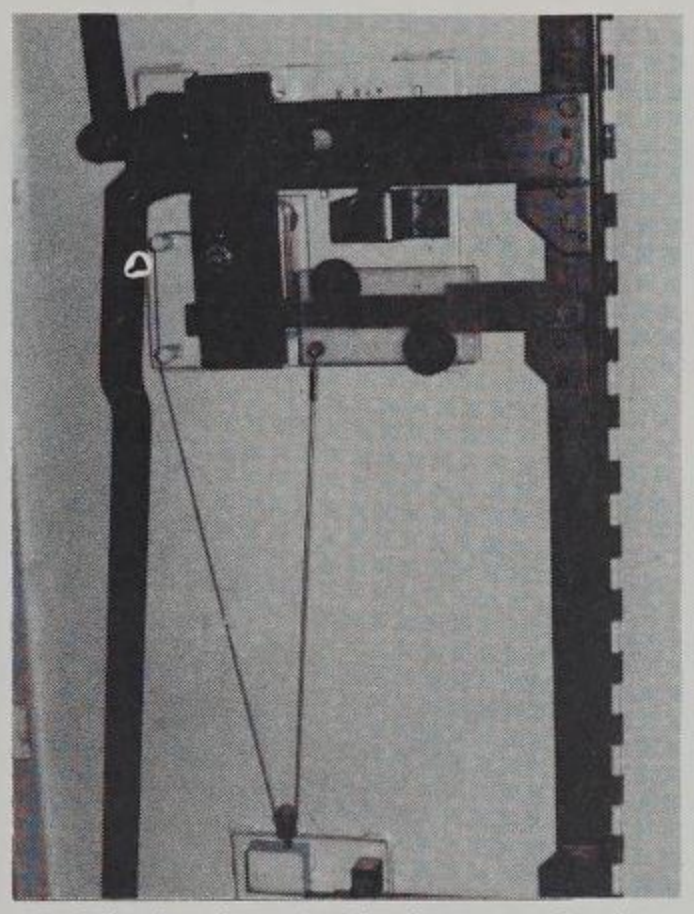
14. Inside view of the door.



15. Close-up of the timelock area.

Slick, huh? For that handy little trick we give thanks to my good friend, everybody's favorite manipulator, Skip Eckert. Thanks Skip.

Photograph 16 shows us the area from the keylock down to the lower relocker. Once again, the cable that controls the relocker is attached to two glass plates—one under the lock, the other under the boltbar next to the lock.



16. The keybox to the lower relocker.

One last thing about drilling: The 6-1/4" measurement that Arnie and I used worked, but was not optimum. A measurement of 5-7/8" back from the face of the door will work nicely on Tann Banker's Cash safes, whether with or without glass. This is a nice compromise between the two, and will yield a nicely placed hole in either model.

Well that about wraps it up for this month. Remember, if you need help with a high-security opening, Have Drill Will Travel...still first class, but since I started drinking coffee again, I need the aisle seat! See ya next month. §

This was a fun job. Arnie and I drilled, scoped, drank, ate, slept and didn't do much else the entire weekend. What a blast.

by Dave McOmie

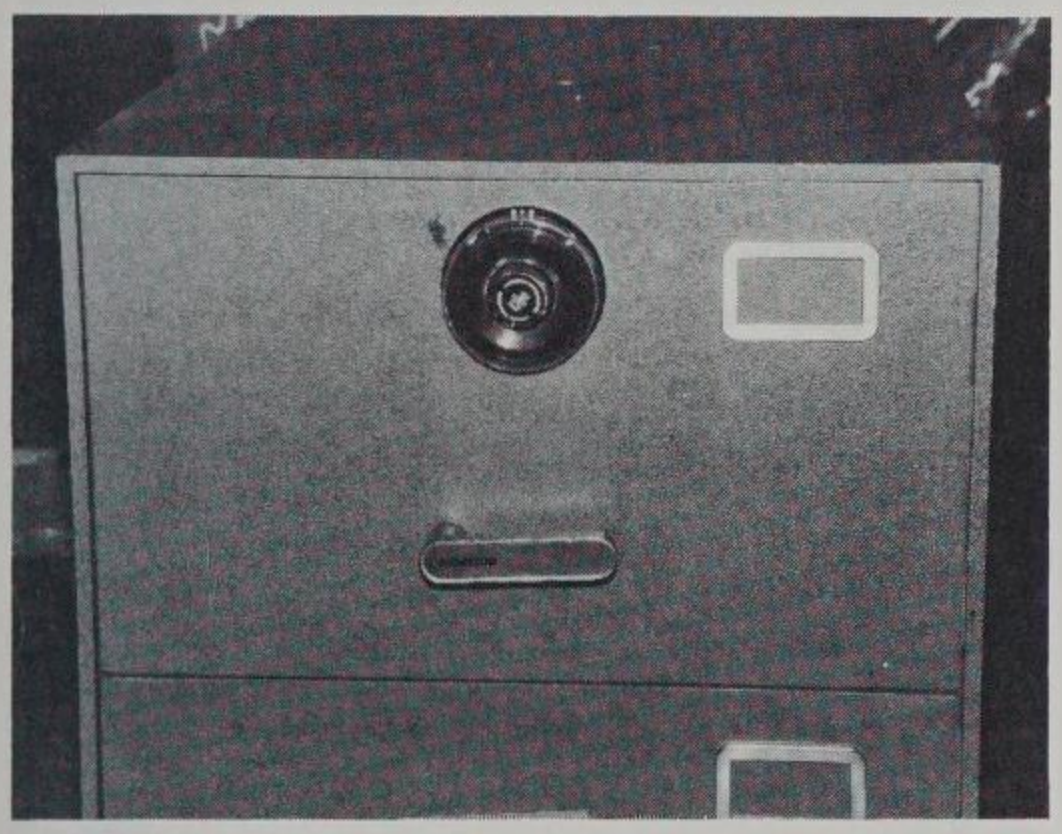
Hamilton's New Hardplate

"Nothing, I repeat, nothing, made by man has so far proven to be undrillable by other men."

All right, all right. It is time for the nonsense to stop. Nothing, I repeat, *nothing* that man has yet made has proven to be to be undrillable. Rumor has been going around that the new hardplate used by Hamilton in their GSA containers is invincible. Not true. It is very good hardplate, but by no means is it impenetrable.

To prove it, my good friend Don Spenard and I performed a little test. Hamilton was good enough to provide us with a drawer head, so we set up shop in the back of Don's service truck.

Shown in photograph one is a Hamilton Class 6 Security File. (This is not the one that Don and I experimented on. We got so excited that we forgot to take pictures until the experiment was well underway.)

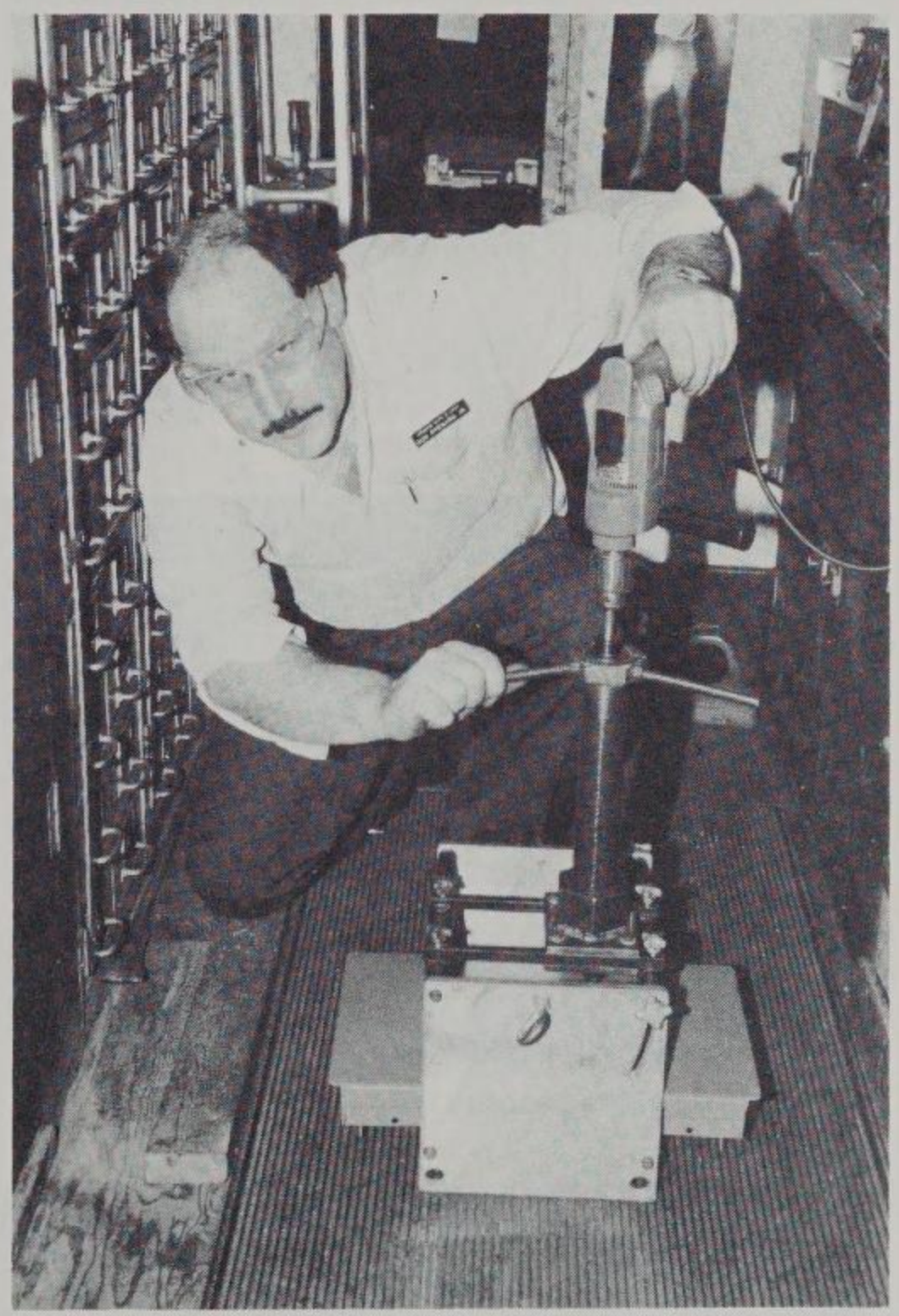


1. The Hamilton Class 6 security file.

In photograph two Don is using his "Mag-A-Trator" to attack the Hamilton. This drill rig is Don's own design. He combined the best features of the Magnum and the Penetrator, and came up with the Mag-A-Trator! Let me tell you, there is not a drill rig in the world that can apply more force than the Mag-A-Trator.

The first hole was put about 3" down and 1" LC. This was to check for consistency in the hardplate, to see if it was easy to drill away from the vital areas. It took approximately 45 minutes and two and a half drill bits. We used slow speed, about 600 rpm, and a lot of pressure. This is one advantage of using a fixed rig like the Mag-A-Trator: you can apply much more pressure for much longer periods of time than you can with a hand-held lever rig.

The second hole was aimed at the fence. It took about 30 minutes and two drill bits. The holes can be



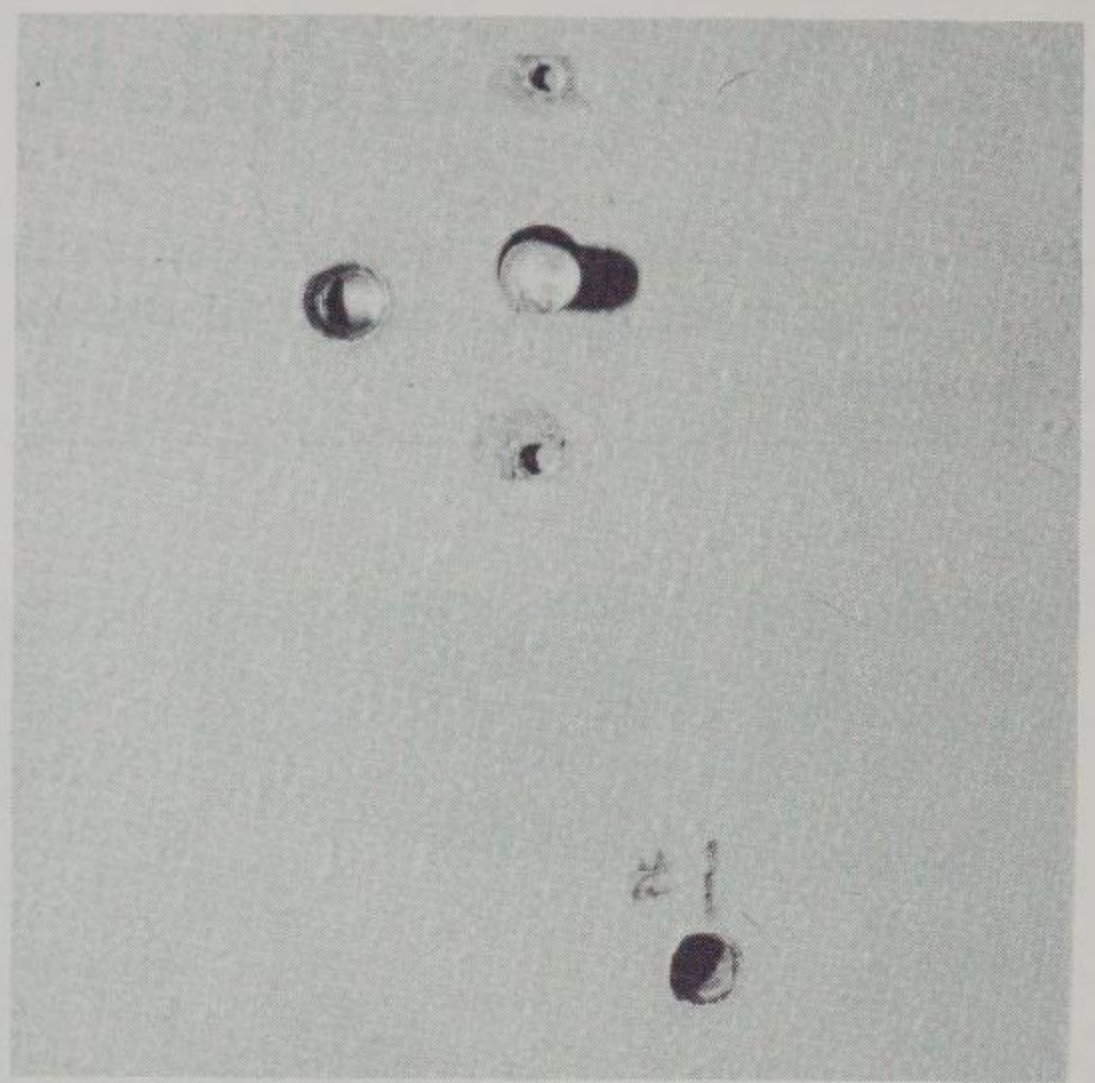
2. Attacking the file with a "Mag-A-Tractor."

seen in photograph three.

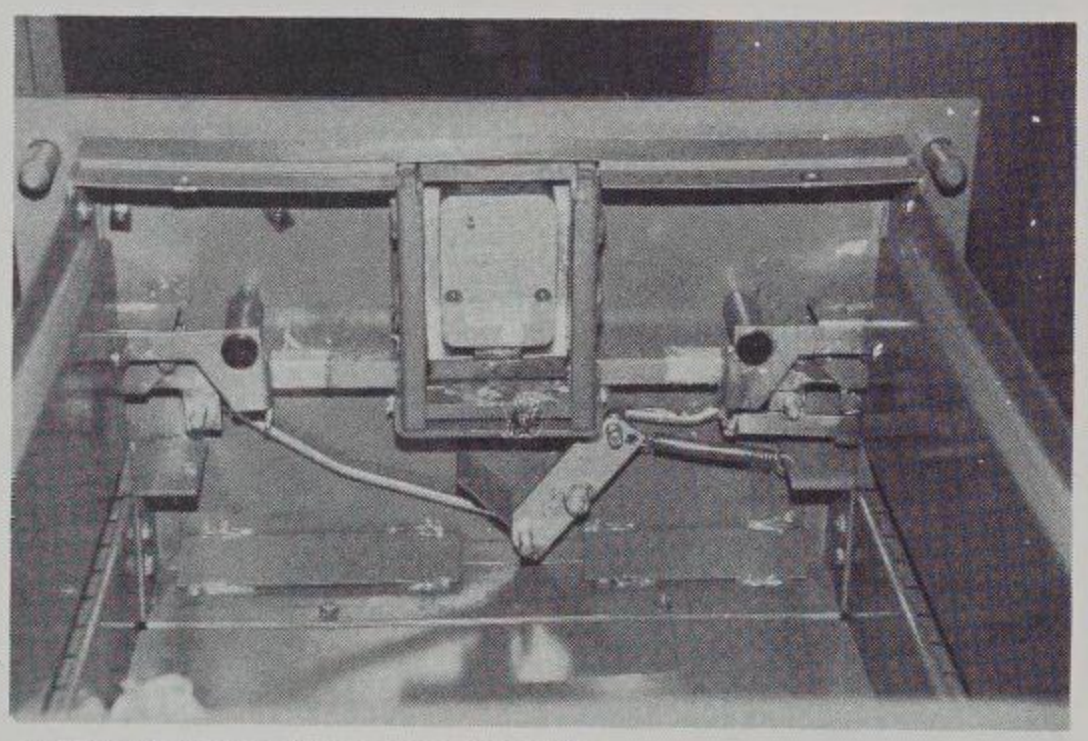
The trick is to keep heavy, steady pressure on the plate. It is slow going, kind of like drilling good quality manganese.

Photograph four shows the inside of a Hamilton Security File. The Sargent & Greenleaf 8550 lock is mounted VD. With the exception of the new hardplate, the internal structure of the new heads is very much the same as depicted here. The handle rotates clockwise to retract the locking bolts.

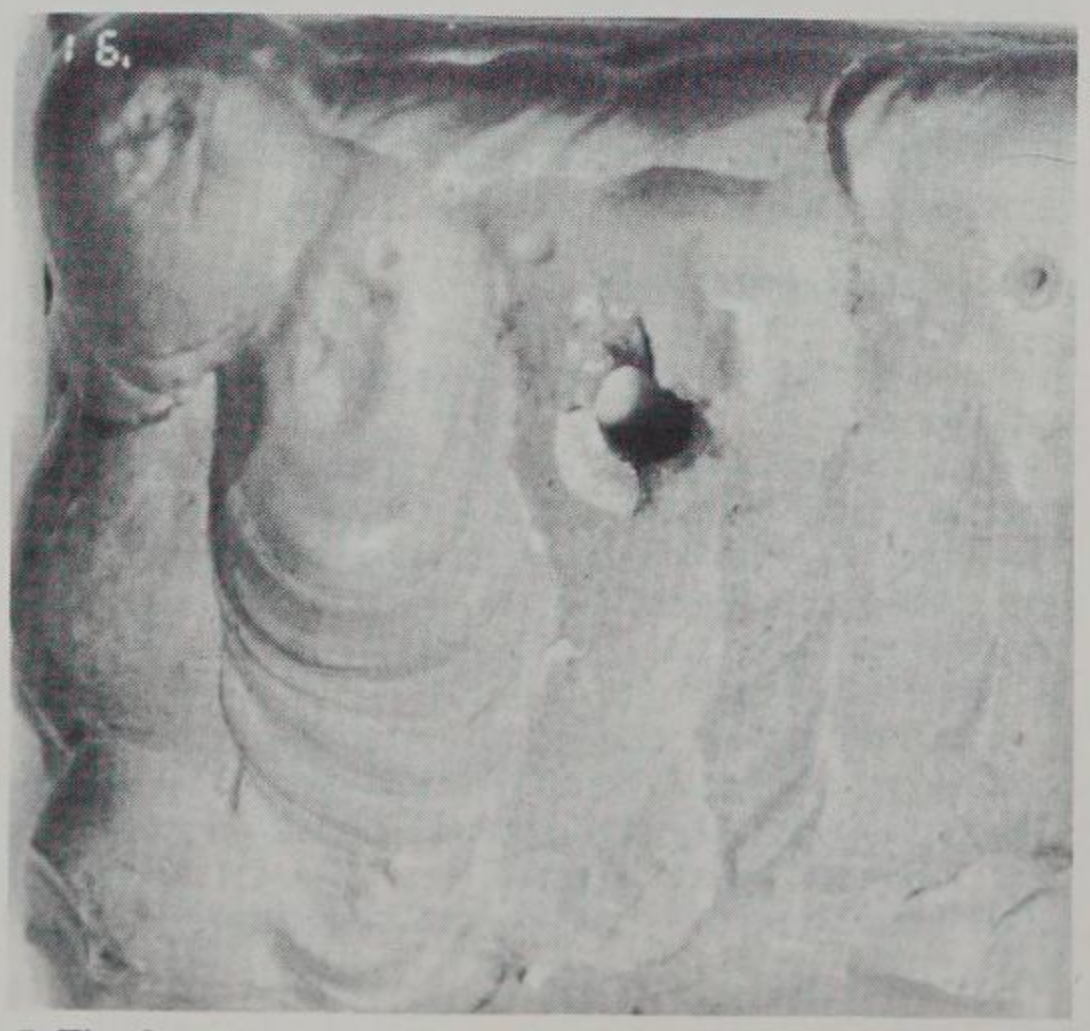
Let's now take a look at the hardplate. But first, let's get our terms straight. When I say the "front" I mean that side of the hardplate that your drill bit will encounter as you penetrate the door. When I say "back" I mean that side of the hardplate that your drill bit will break through



3. The two holes made in the file wall.



4. The inside of the security file.



5. The front (or nasty) side of the hardplate.

before it penetrates the lockcase.

Photograph five is of the front of the hardplate. As you can guess, this is the nasty side of the plate. It consists of a hard-as-hell weld that is a real bear to drill through.

Photograph six is of the back of the hardplate. As you can see, it is not lumpy like the front of the plate is. Photographs five and six were given me by my friend Carl Cintron from Cintron's Safe and Lock in the greater D.C. area. Carl drilled his hole in 45 minutes, just about the same time we took.

6. The back of the hardplate.

Photograph seven shows us the bottom of the hardplate box. This is the part that protects the lock from a bottom-drilling attack. As you can see, it is well-welded. Even mild welds can sometimes be a pain in the

7. The well-welded bottom of the hardplate box. It's extra-hard to penetrate.

butt to drill through. This hard weld that Hamilton is using is good stuff.

So what is the rating? Well, based on this limited test, I think Don, Carl and I would put this hardplate in the top five, with only Relsom and Maxalloy clearly ahead of it. Pretty good for the new kid on the block. Congratulations to Hamilton and Miller on a fine product. It isn't impenetrable, but it is a fine piece of hardplate. And so it goes: the battle between manufacturer and safeman continues.... §

Oops. This is a Class 5 Hamilton, not a Class 6. Sorry for the boo-boo.

by Dave Mc Omie

Kumahira Bank Vaults

"With battle plan in hand, Dave attacked the first vault the next morning.He commenced to drill."

Some people learn slow. Some people learn fast. A few learn *real* fast. Most of us in this business are probably in the middle category. The young man we are going to visit this month belongs in the latter category—he has learned so fast that it makes my head hurt.

I first met Dave Richardson at a convention in Los Angeles back in 1986. He was making the transition from doing general locksmithing to doing strictly safe work. Dave was hungry for equipment and knowledge, so we spent quite a bit of time talking about tools, tricks and technique.

I thought Dave had a good shot at being successful. He was in one of the largest metropolitan areas in the world (Los Angeles), he was obviously dedicated, and was willing to make the necessary investments, both in time and money, to become a first-rate safecracker.

I can remember in the early years getting calls from Dave on a variety of openings, from cannonballs to quickies, Relsom to Maxalloy, weird malfunctions to manipulations. I was always impressed by how quick he would catch on. We all know how difficult it can be not only to explain something over the phone but also to understand the explanation. Dave was always right with me; he never got lost (which is impressive in itself, because I am not the world's greatest explainer).

As the months and years rolled by, the calls *from* Los Angeles became less and less frequent, while the calls *to* Los Angeles became more and more frequent. And today, I find myself calling Dave just as often as he calls me. I guess you could say we now operate on the Hannibal Lechter Principle of "quid pro quo," where reciprocation reigns supreme.

The most recent conversations between Dave and I have been about bank vaults. I wrote an article a few months back on a bank vault that I drilled, and Dave now had two to drill himself. Both were Kumahira vault doors, made in Japan. Both were in failed banks that had been renovated and reoccupied by small businesses.

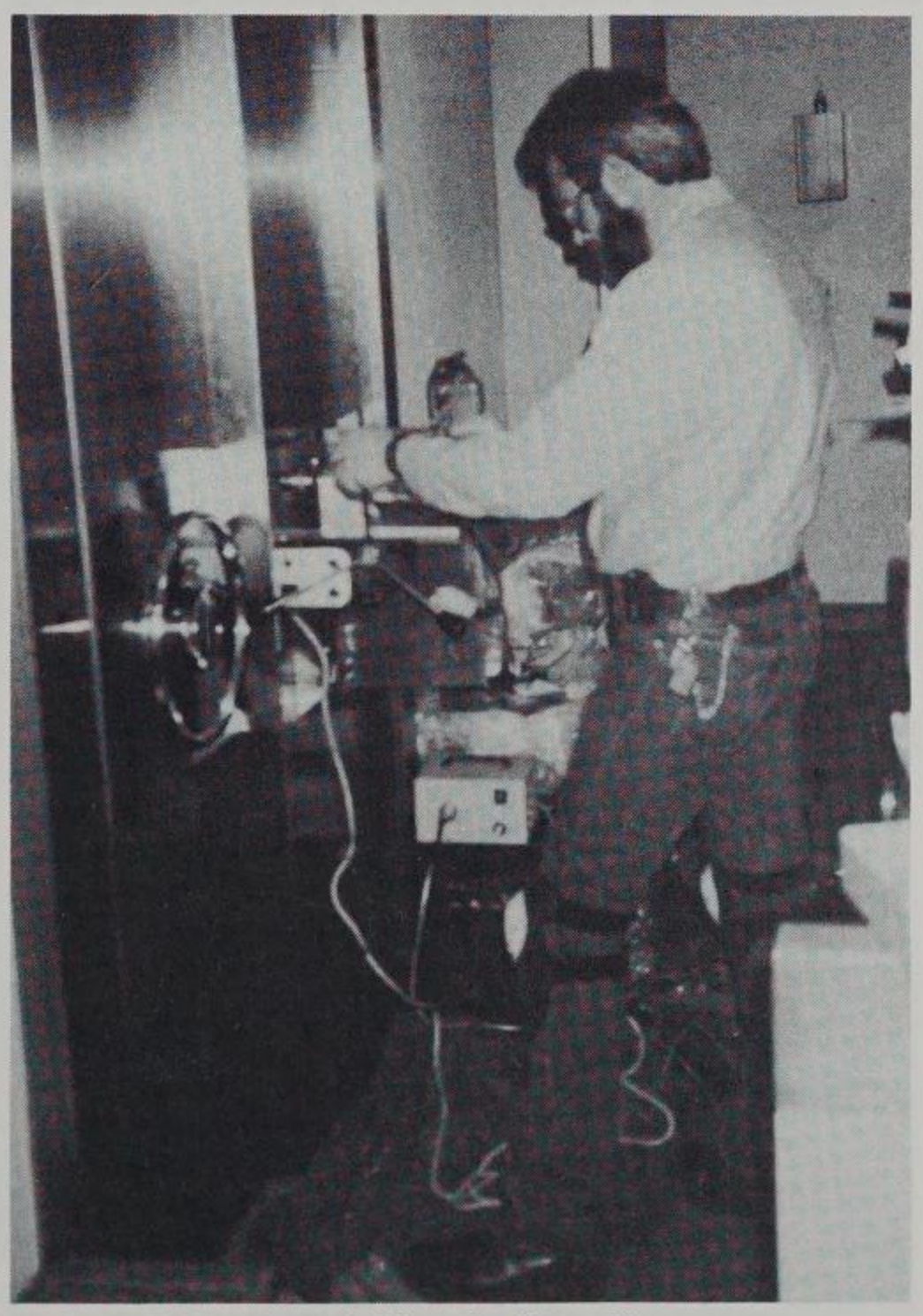
The question, as always, is: What is the best drill point? The answer, with respect to Kumahira bank vaults, is: it depends! Some Kumahiras use direct-drive locks, some use indirect-drive locks. Some RH doors have the locks mounted RH, while other RH doors have the locks mounted LH; and vice versa for LH doors. Dave and I compared photographs and notes on a dozen different Kumahira bank vaults, and came up with the following tentative formula:

(1) Twirl the dials and determine whether the locks are direct-drive or indirect-drive (indirect-drive locks invariably have a geared feel and sound to them; direct-drive locks do not).

(2) If the locks are direct-drive, then the locks will be mounted with the lockbolts pointing toward the hinge side of the door. This means that a RH door has the locks mounted LH, and a LH door has the locks mounted RH.

(3) If the locks are indirect-drive, the odds favor the locks being mounted with the lockbolts pointing toward the opening side. This means that a RH door has the locks mounted RH, and a LH door has the locks mounted LH.

With battle plan in hand, Dave attacked the first vault the next morning. Twirling one of the dials, he neither felt nor heard any "gearedness." This told him that the locks were direct-drive. Following the formula, he proceeded on the assumption that the locks were mounted with the lockbolts pointing toward the hinge side of the door.

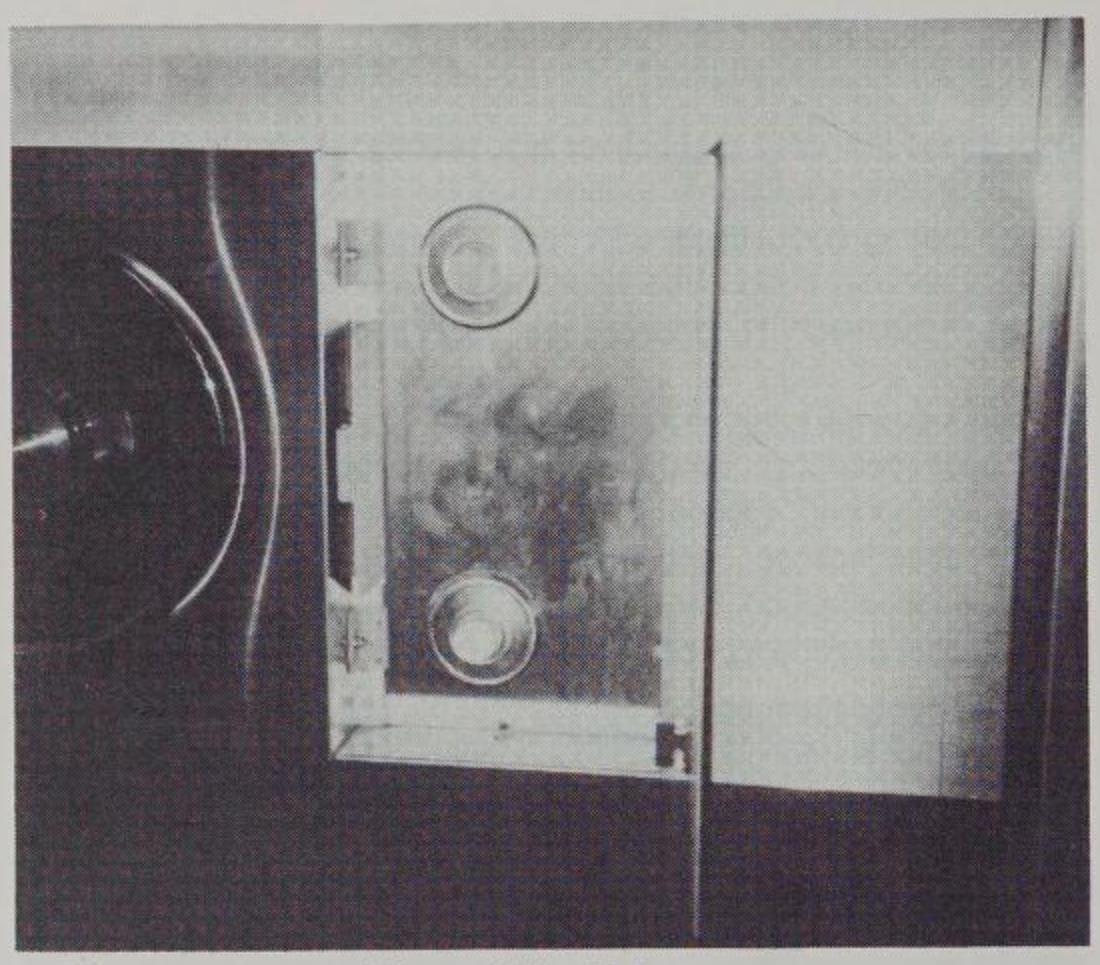


1. Dave Richardson drilling the Kumahira.

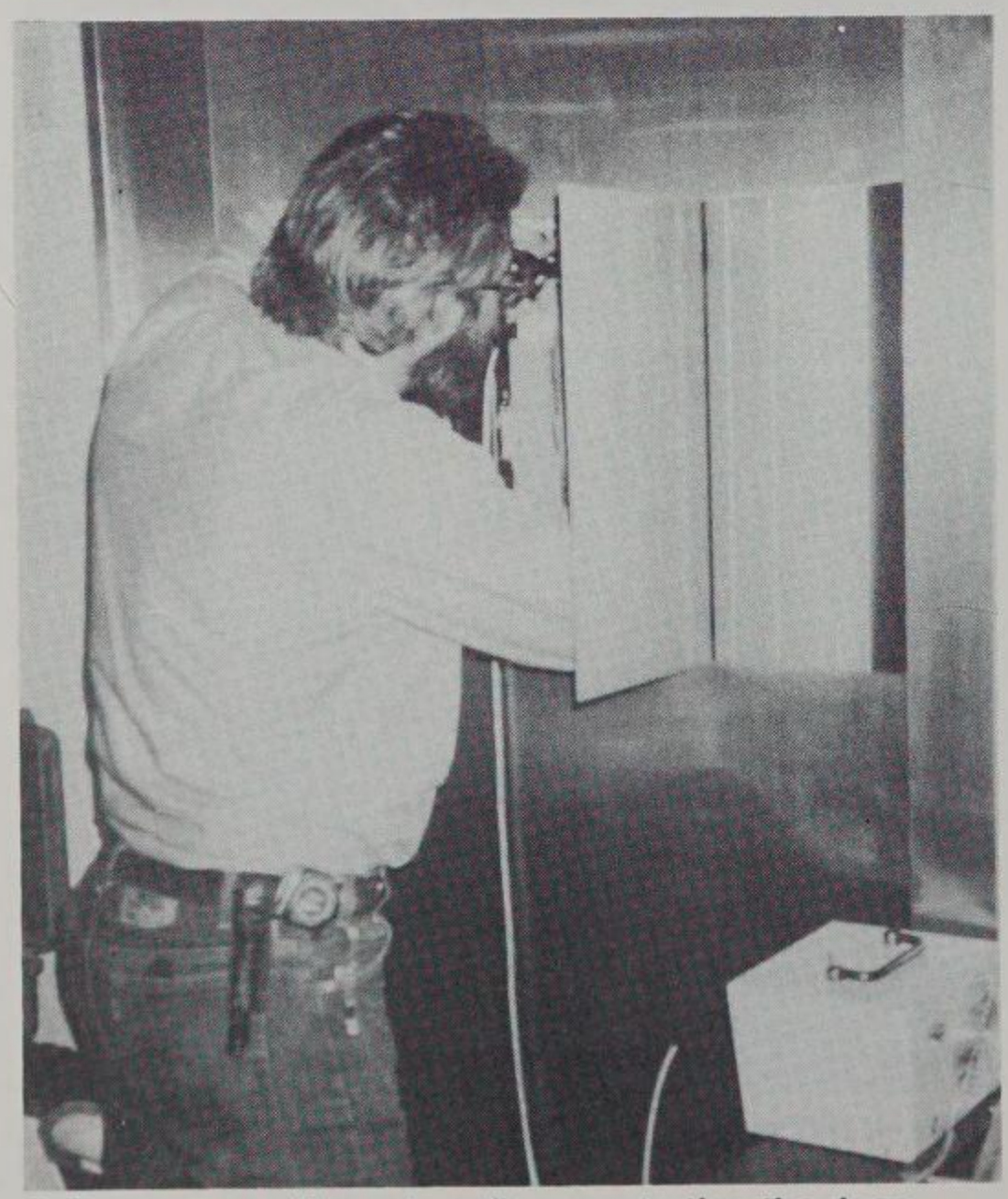
Since this was a RH door, this meant that the locks were mounted LH. It also meant that the locks were true LH locks. We know this because S&G vault locks have no lever spring—they rely on gravity. Therefore, they have to make LH locks, since you cannot turn an S&G vault lock upside down and have the lever drop in.

Dave chucked in a 5/16" bit, mounted his magnetic drill press onto the vault door, and commenced drilling (*See photograph one*). Notice how well prepared Dave is, right down to wearing carpenter's knee-pads. Oh how I wish I had been smart enough to start wearing knee-pads long ago, before the damage was done. I probably would not be knock-kneed today!

Photograph two gives you an idea what the area around the dials looks like. The little door that covers the dials is open in this photo, giving us a clear view. Dave



2. The area around the safe's dial.



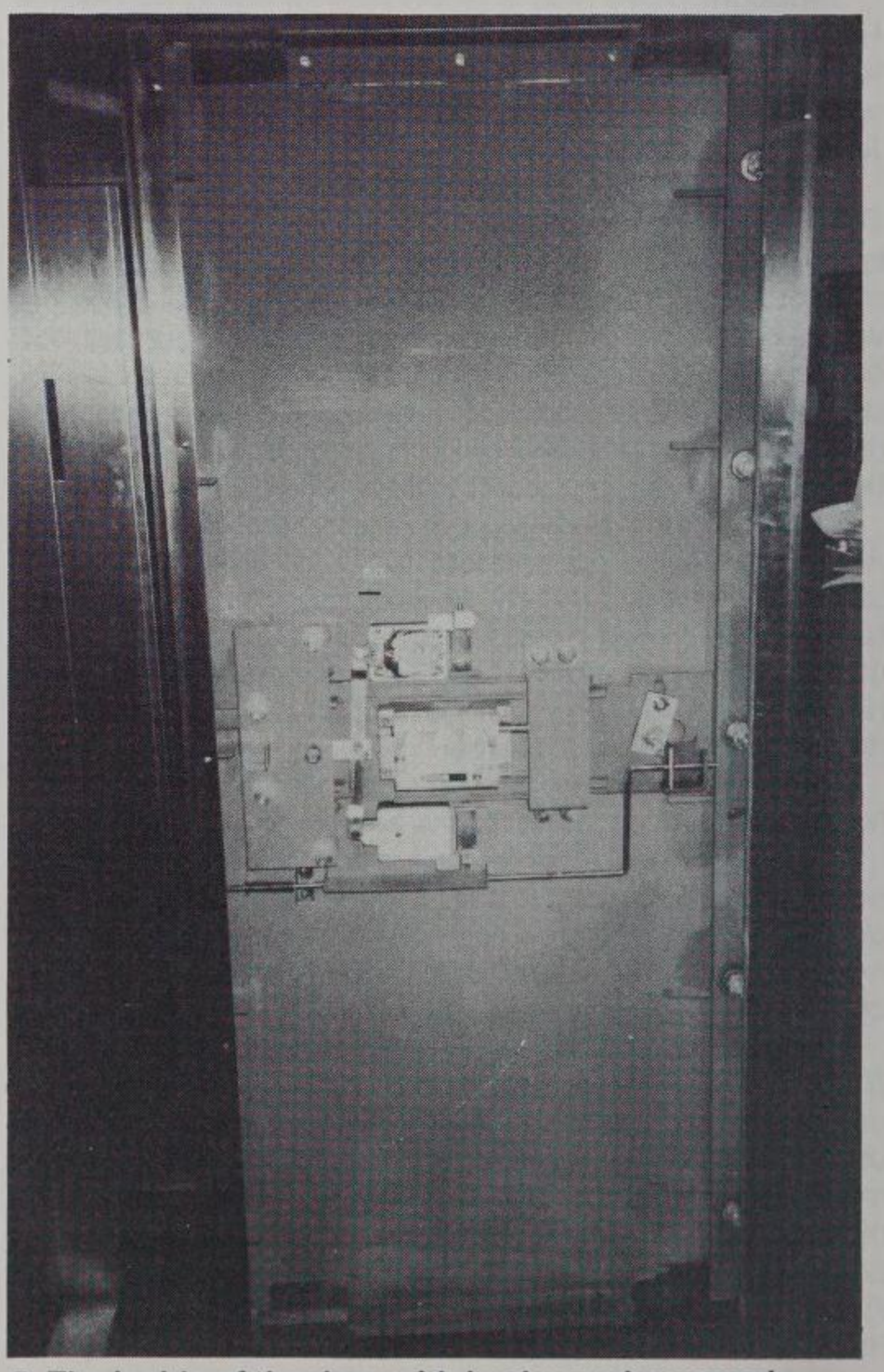
3. Dave scopes the gates after penetrating the door.

mounted his magnetic drill press in between the two dials.

Kumahira would be embarrassed to know how fast Dave penetrated their vault door. I have spent more time in the drive-thru lane at McDonald's, waiting for a #2 Extra Value Meal and my change!

After penetrating the 3-1/2" thick door, Dave inserted his scope into the hole and looked around. In photograph three he's kneeling as he scopes the gates of the four wheels This is where the knee-pads really help. Once the gates were lined up under the fence, he rotated the dial to the stop position, gave the round bolt-control handle a turn, and the bank vault was open. Even with thousands of openings under his belt, Dave still

4. The manufacturer's decal found on the inside of door.



5. The inside of the door with back panel removed.

had that surge of adrenalin that only comes when you swing that door open. He remarked, "what a rush it still is!" Yes, indeed, what a rush, especially when the door being swung open is a bank vault!

On the inside of the door is the manufacturer's decal, as shown in photograph four. This door was imported by Security Corporation of Irvine, California. The

manufacturer is Kumahira, of Hiroshima, Japan. The model is an International II, and the solid metal thickness is 3-1/2."

In photograph five we have the inside of the door with the pain-in-the-rear back panel removed. Notice that the locks are mounted with the lockbolts pointing toward the hinge side. This is a 1-way boltwork. The long, flat locking bar on the opening side is what holds this door locked.

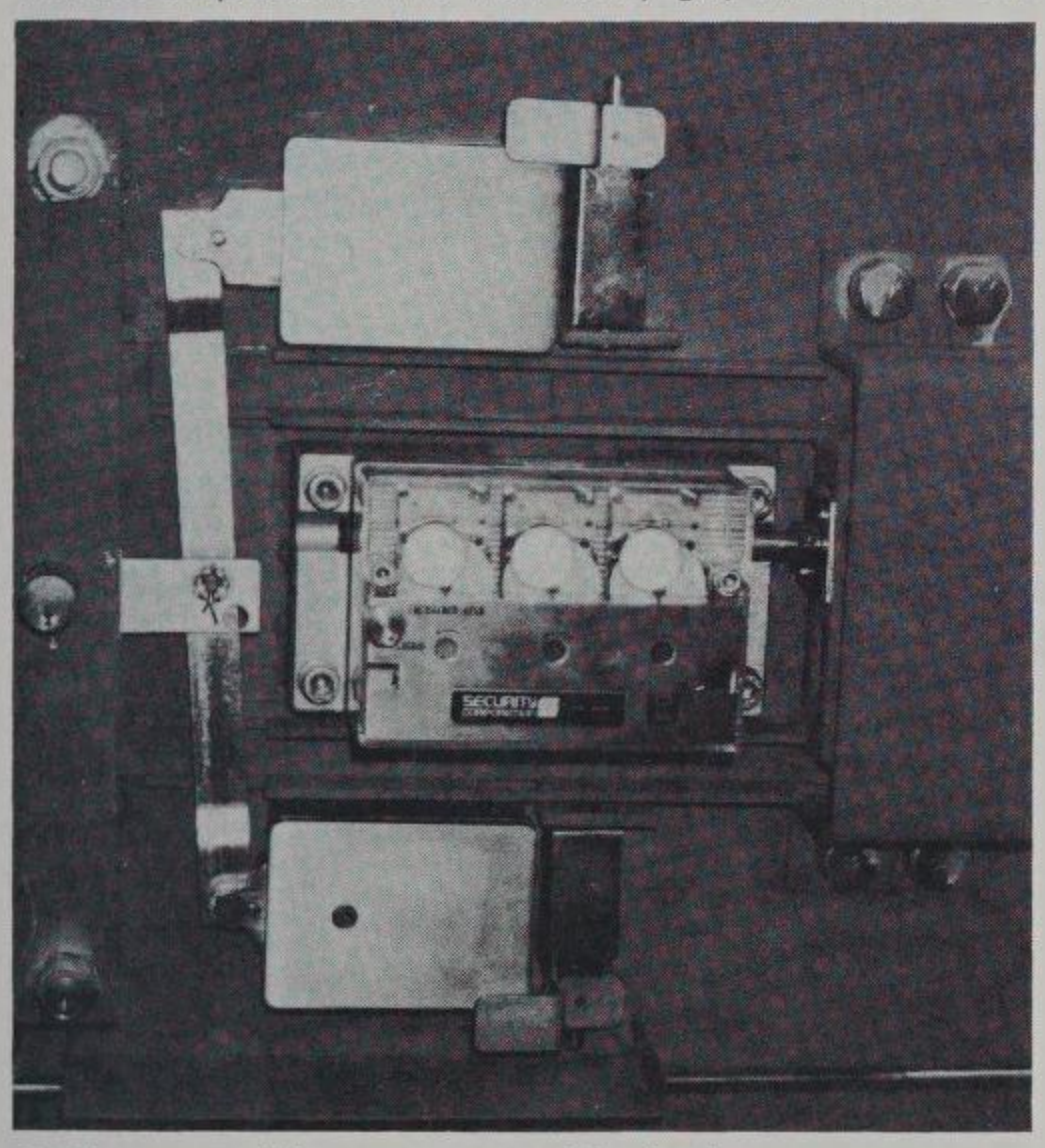
Photograph six gives us a close-up of the area around the locks. Notice that each lock has its own external relocking device that fires if the back cover is punched. In between the locks is a three-movement timelock. Notice how short the snubber bar is.

Dave did his usual he-man repair on this vault door. Even though there was not much resistance when he drilled it, he made darned sure that there will be considerable resistance if anyone else tries to drill through his hole. In the door are now two ball-bearings, two grade-eight hardened bolts, and assorted other welded surprises for the next lucky guy that has to drill this vault door! Photograph seven shows the area underneath the dial ring where Dave drilled his hole. Can you see it? I should note that this photo was taken *before* Dave blended the finish in. And bear in mind that this is all *under* the dial ring. Nice work, Dave.

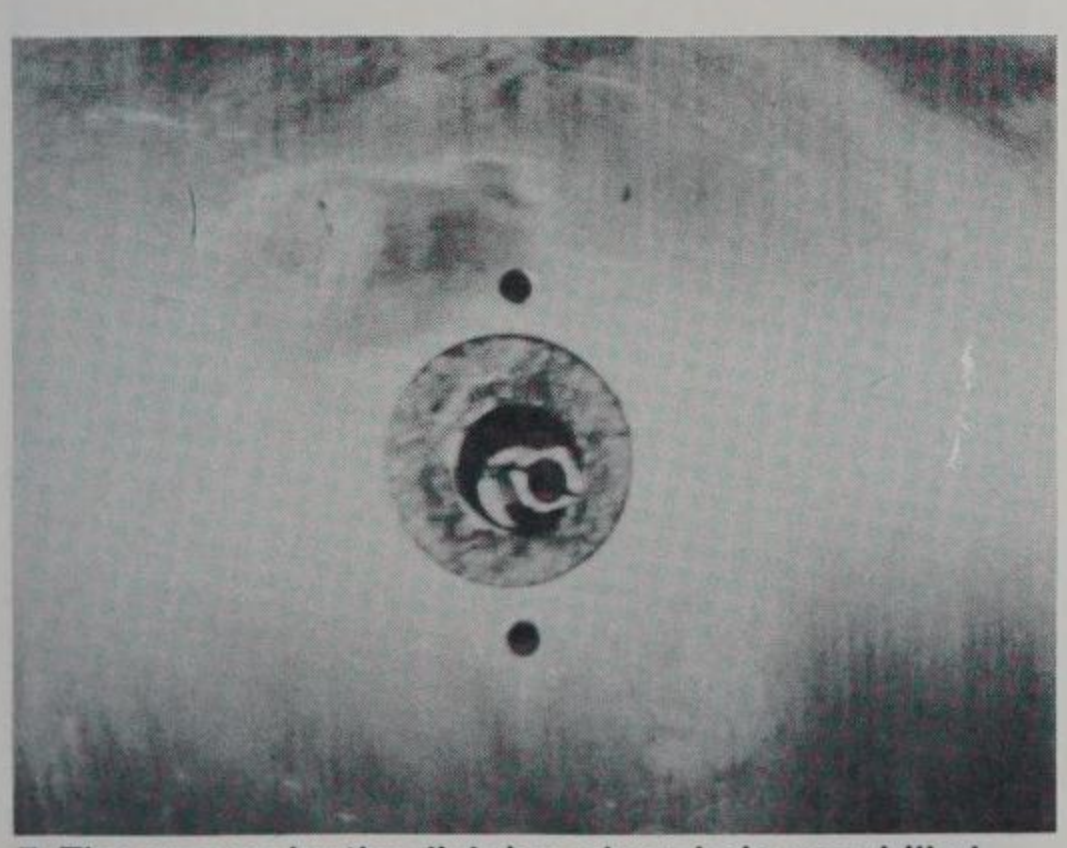
The following morning, Dave headed for San Diego and vault door number two, shown in photograph eight. Notice this door is virtually identical to the last one, with one small difference: this is a LH door. Dave twirled the dials, felt and heard no "gearedness," and deduced that the locks were mounted with the lockbolts pointing toward the hinge side. Since the door is LH, that meant that the locks were mounted RH.

Once again Dave chucked in a 5/16" drill bit, mounted his magnetic drill press onto the vault door, and commenced drilling (*see photograph nine*). And once again, he was wearing his knee-pads—smart guy, I'll bet he can still run a mile without a creaking knee.

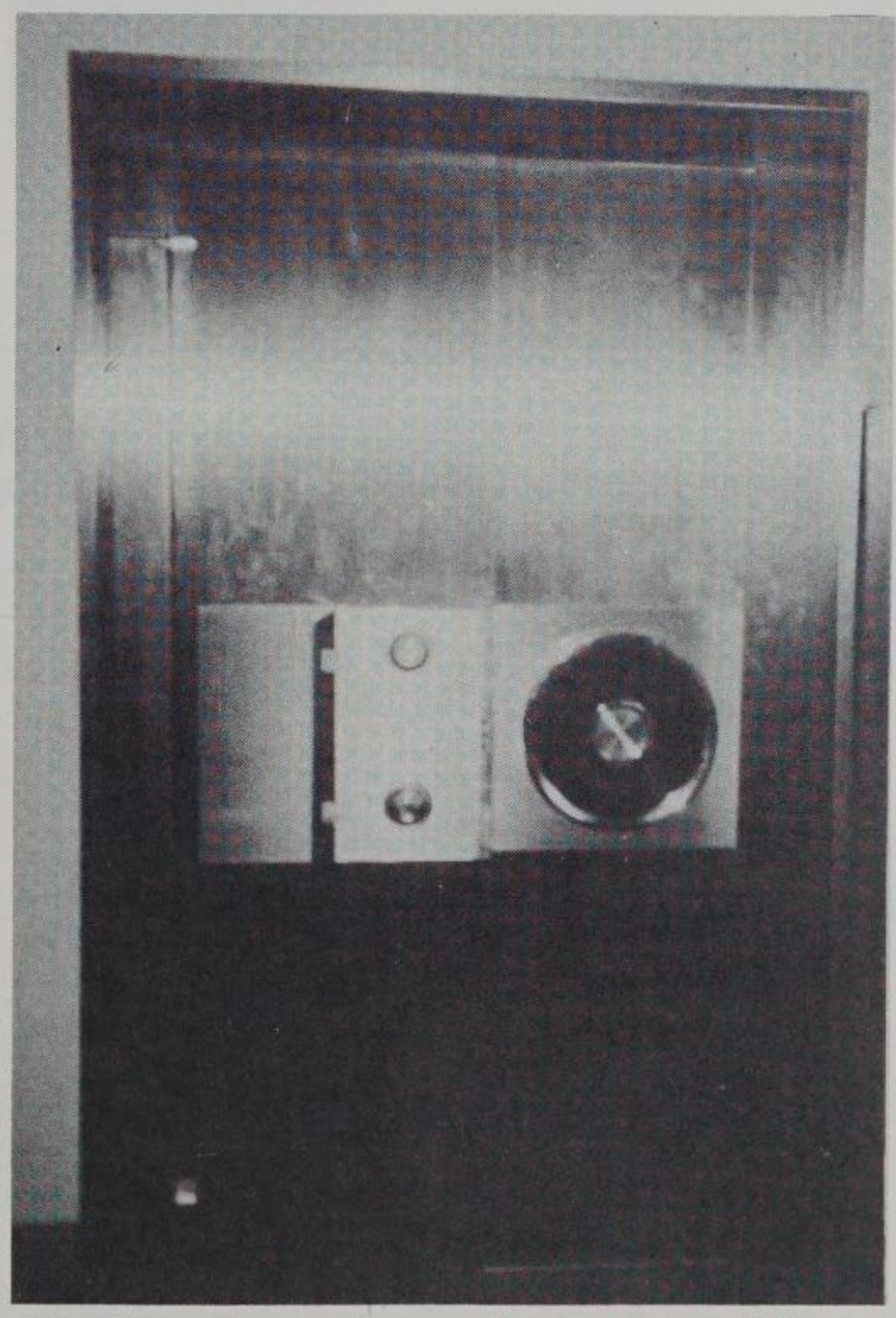
Like last time, Kumahira would be embarrassed. Dave penetrated the 3-1/2" of solid steel, scoped the lock, and swung open the vault door before his helper got back with lunch.



6. Close-up of the area around the locks.

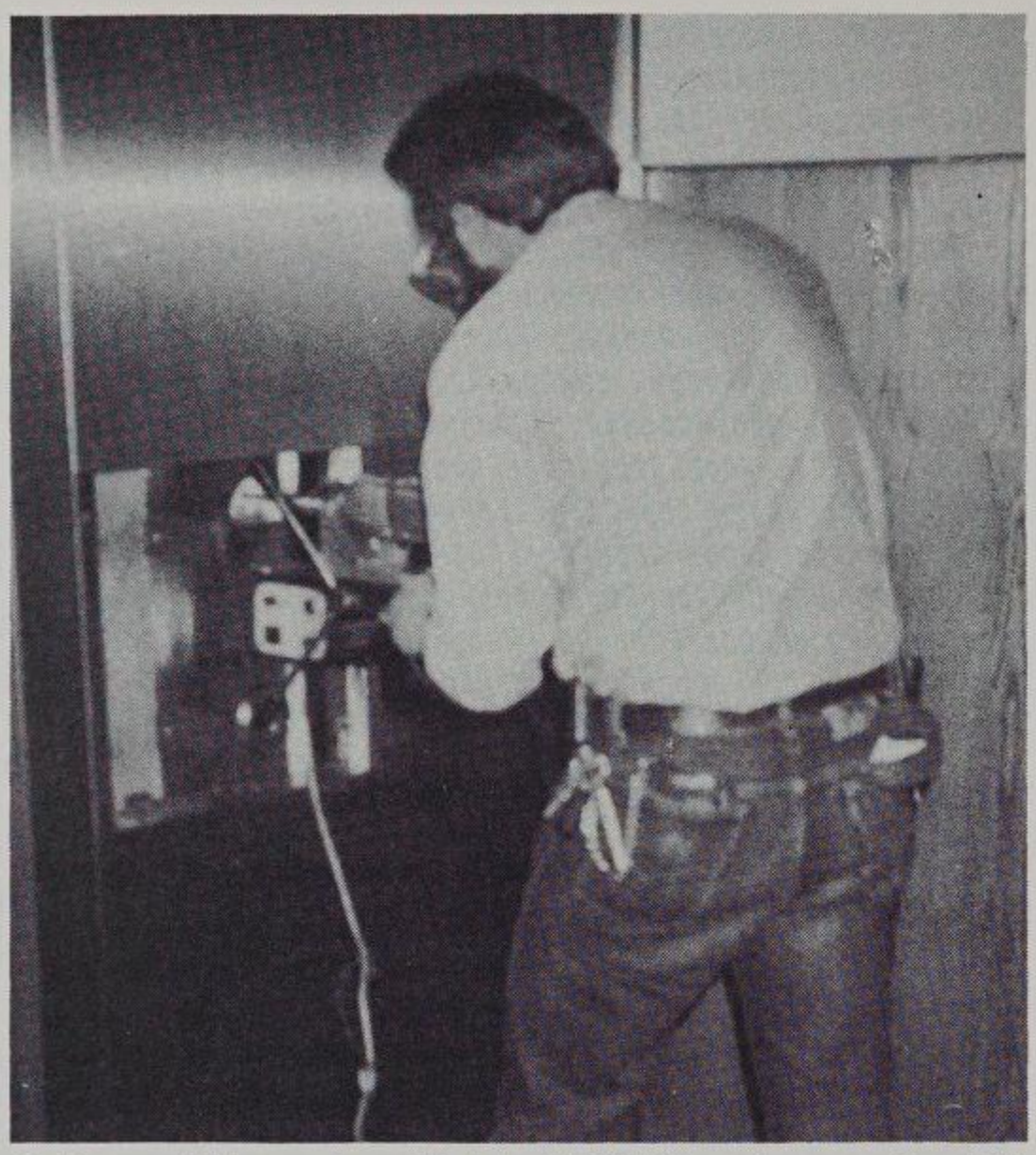


7. The area under the dial ring where hole was drilled.

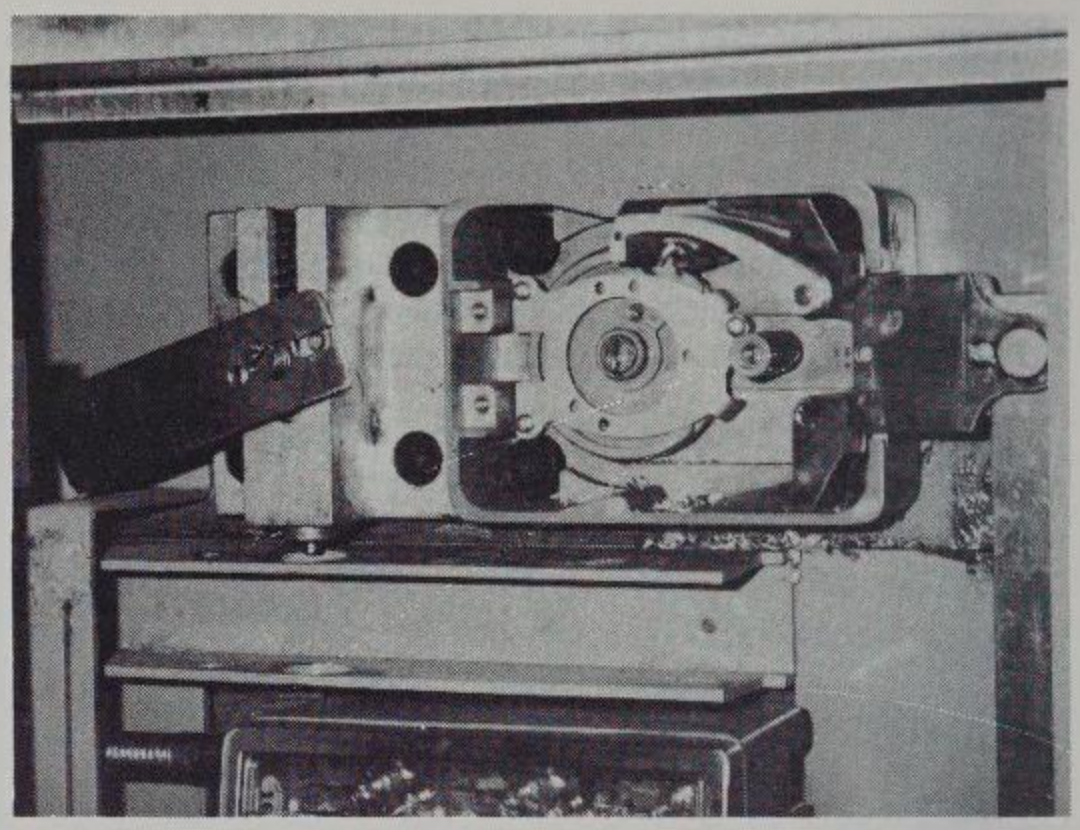


8. Another vault door to open; the same except this one is a left hand door.

Photograph ten shows us the area around the lock. Remember, this is the inside of a LH door. The lock is a RH lock mounted RH. Look carefully and you will see a drill bit sticking through Dave's hole just under the lever. Bravo.



9. Dave drills again, with his 5/16" bit and magnetic drill press.



10. The inside area of this LH lock.

I love success stories. And Dave Richardson's story is one of my favorites. The transition from general locksmith to safecracking specialist is one that few are able to make. It is tough, trying, and tests one's mettle to the max. But Dave did more than merely make the transition; he has become one of America's premiere safemen. §

When it comes to penetration, Dave Richardson is an animal. He is utterly ferocious in his attacks. I hereby bestow upon him the fitting nickname of Dave "The Beast" Richardson.

by Dave McOmie

Opening National & HHM

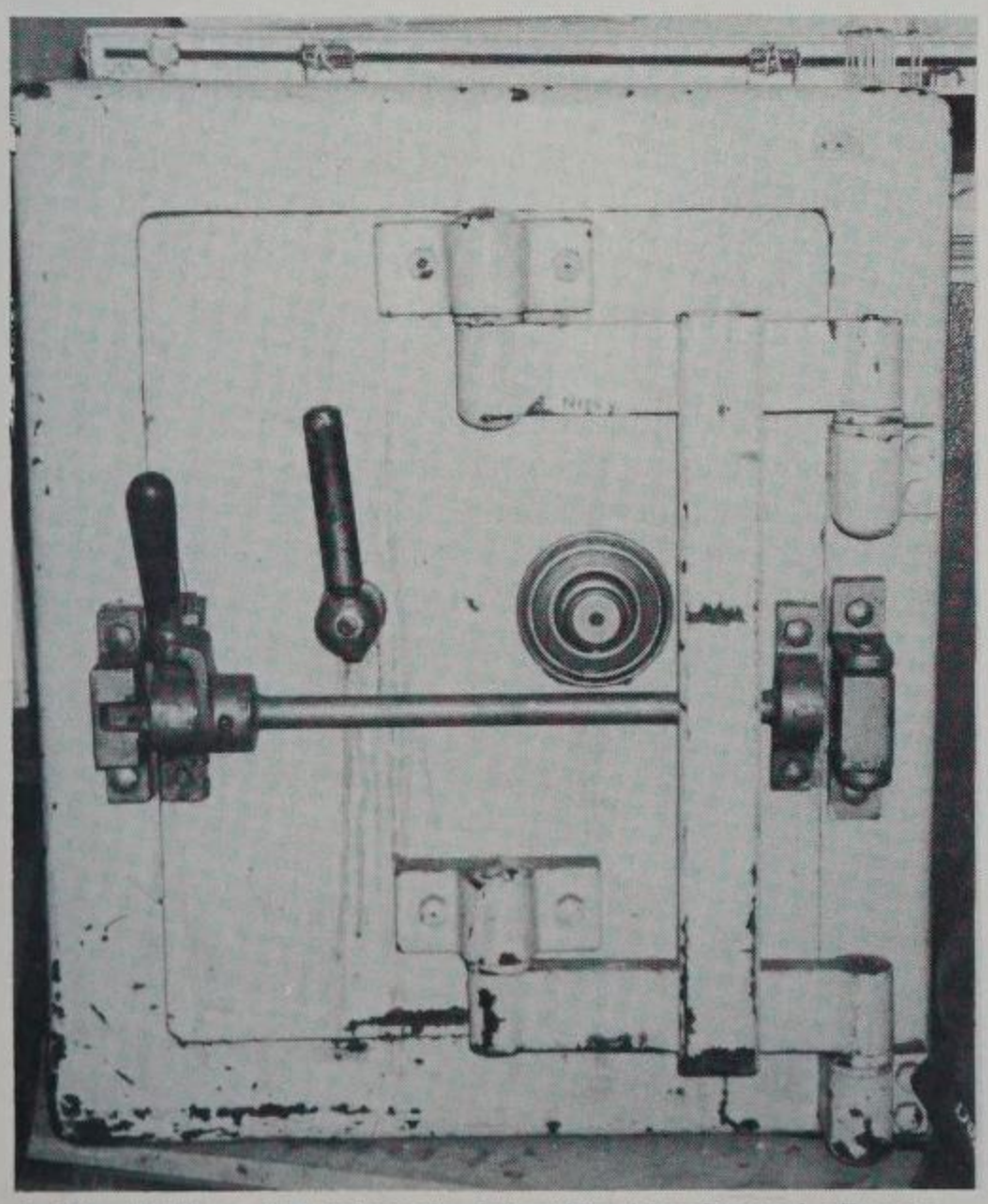
"I strongly suspected it was a National, but, alas, I could not prove it to my satisfaction."

In the January 1992 issue my article featured a few safes for help on positive identification. The lone documented response came from Dave LaBarge of Watervliet, New York. Dave was able to confirm my suspicions on the National Bank Safe shown in photograph one. I strongly suspected it was a National, but could not prove it. (The only kind of proof I accept are the manufacturer's name on the safe, or an antique catalog depicting the safe in question.) Dave had an identical safe to open, and his safe had National's name right on the dial ring. I sent Dave the information on the lock, the drill point, and a complimentary copy of *The National Locksmith Guide to High-Security Safes*; and he sent me back photos of the successful opening.

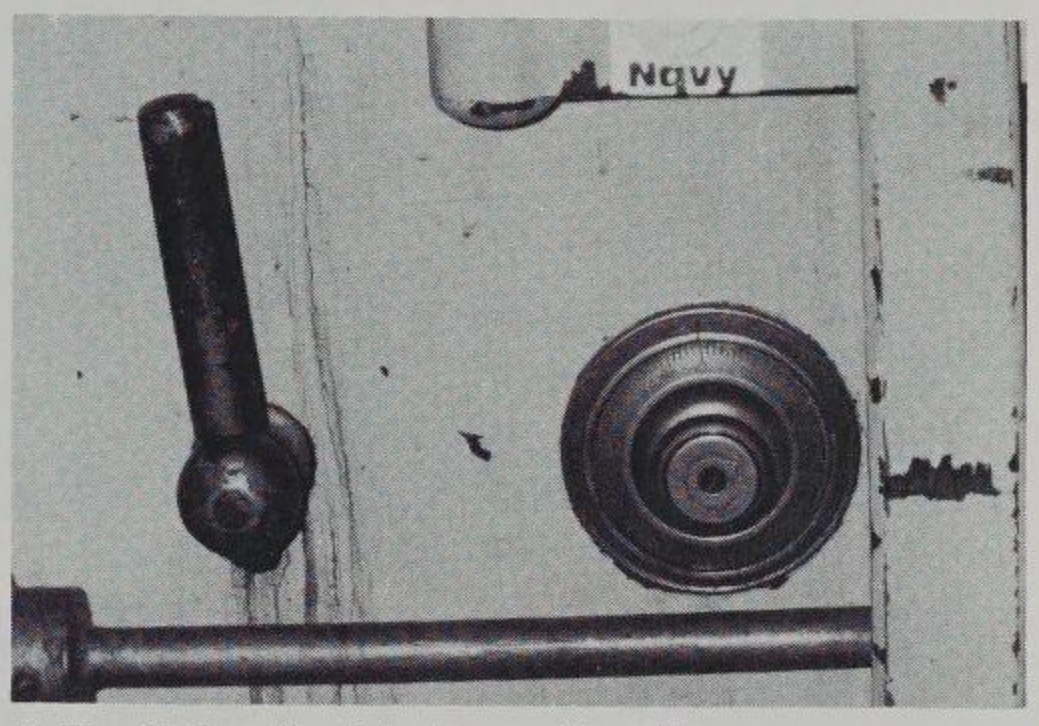
In photograph two, we have a close-up of the dial, ring and handle. I doubt it will show up in the magazine, but on Dave's original photo I can faintly make out "National Safe & Lock" on the ring. The dial is a standard Yale and Towne.

Based on my photos, I assumed the lock would be a Yale 029-1/2. This is an indirect-drive lock; the distance from dial center to actual wheel center is 1-1/4." The last turn of the dial is left to stop.

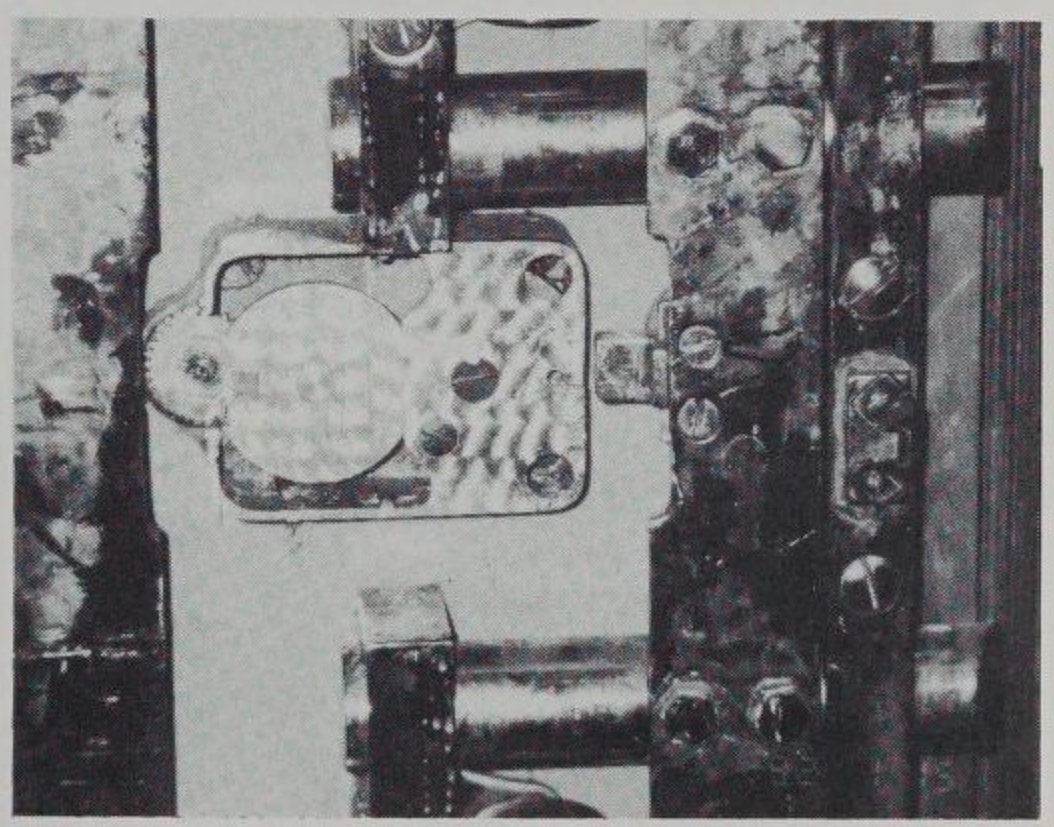
Dave drilled it at about 1" LC, and 1-1/8" down. This kept his hole under the dial ring, and brought him into the lower part of the lock for a nice scope hole. Smart move: make the repair as easy as possible by keeping the hole below the dial ring. This can get tricky on an indirect-drive lock. After his hole was all the way through, Dave scoped the wheel gates, transferred his numbers over to drop-in (about 15 numbers away), and the National was open.



1. The National Bank safe, identified by Dave LaBarge.



2. The National's dial, ring and handle.

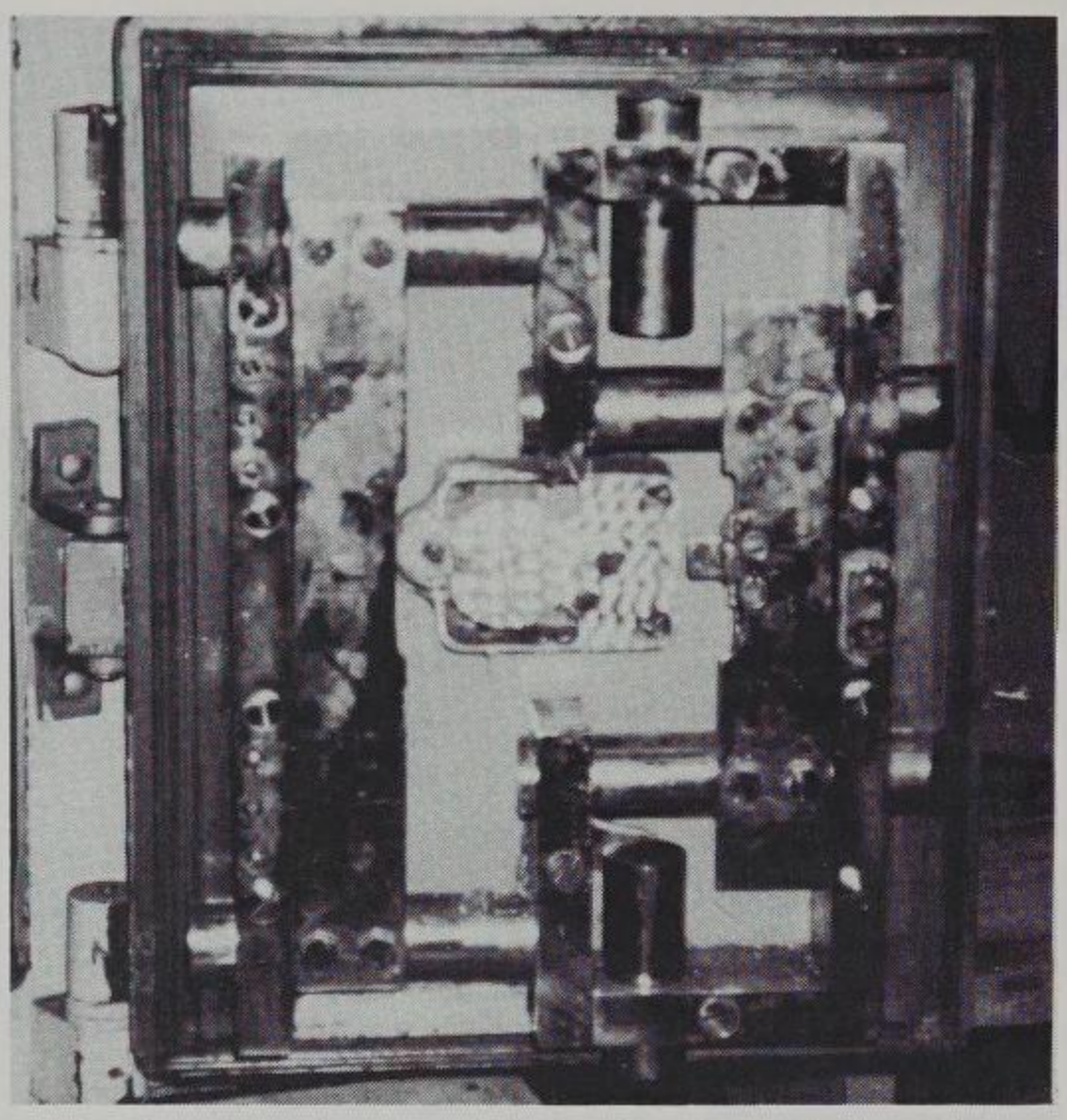


3. Close-up showing that this is indeed a Yale 029-1/2. Notice the hole just below the wheel pack.

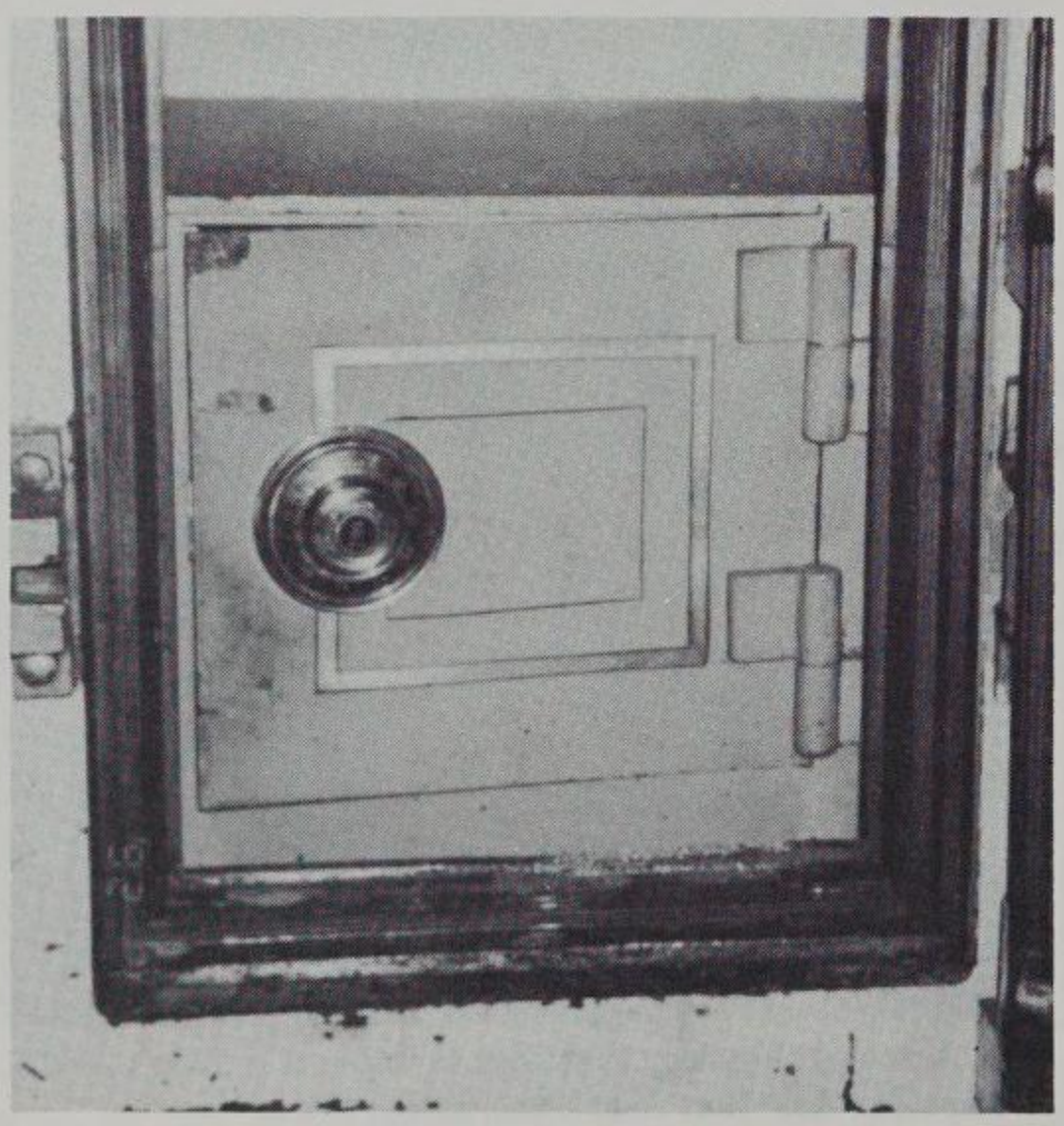
In photograph three we have a close-up of the area around the lock. Yep, it is indeed a Yale 029-1/2. If you look hard you will see Dave's hole just below the wheel pack. Very nicely placed. Anytime you can drill an indirect-drive lock and keep your hole under the dial ring, you are doing an A-1 job.

Photograph four shows us the inside of the door. Notice the 4-way boltwork. Very impressive.

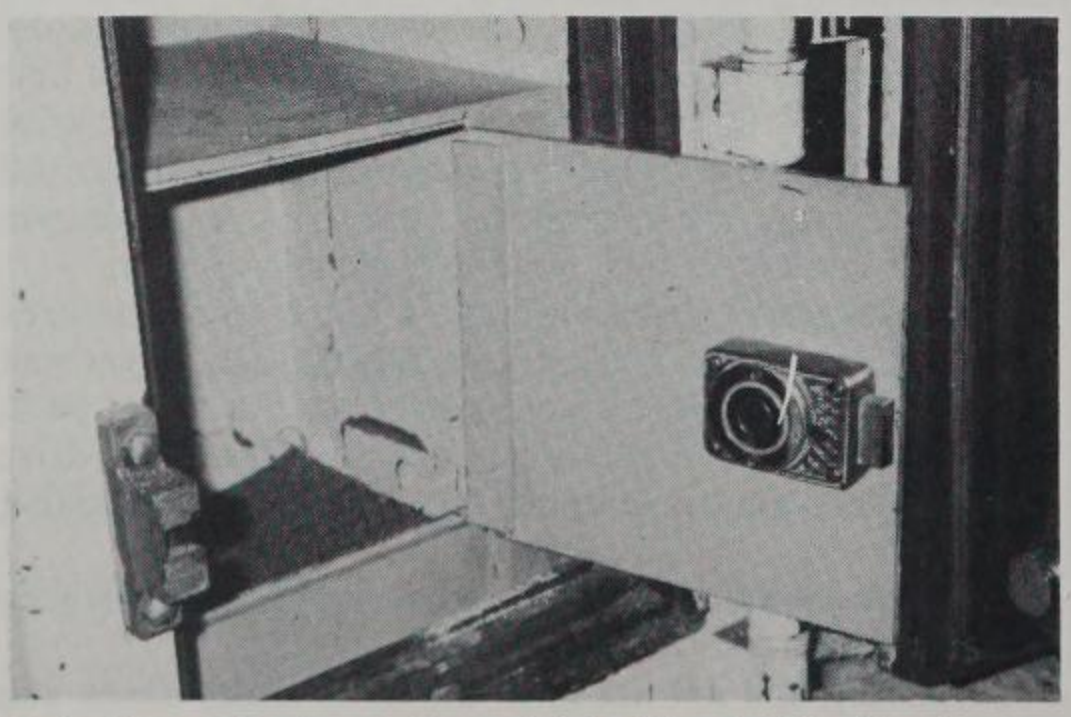
In photograph five we have the inner door, which was already unlocked when Dave swung the outer door open.



4. The inside of the door. Notice the 4-way boltwork.



5. The inner door of the National.

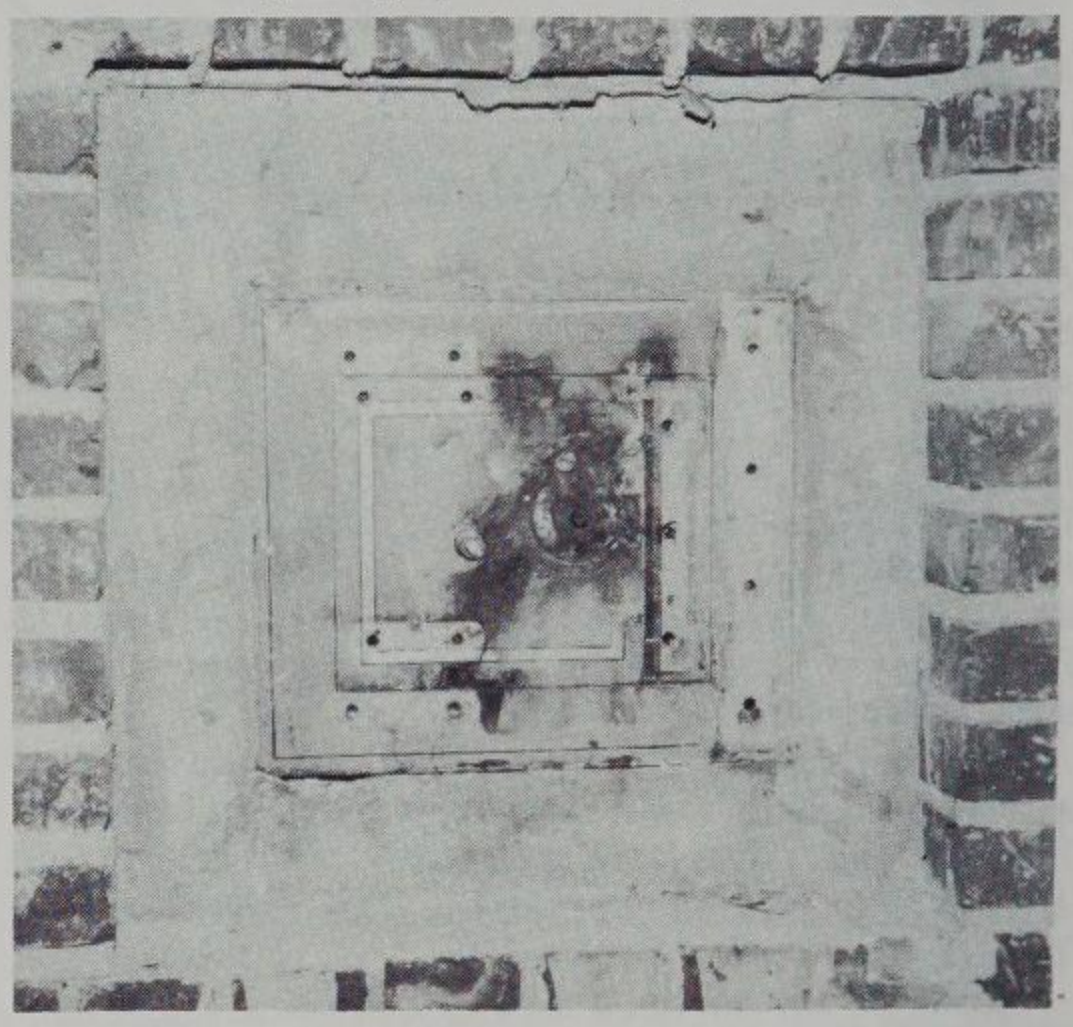


6. Inside of the inner door, held with a lockbolt only.

Photograph six gives us a view of the inside of the inner door. As you can see, it is held locked only by the lockbolt. There is no boltwork to contend with. If you wanted or needed to, you could drill and punch back the lockbolt, though I would favor drilling straight in from just outside the dial ring at about 80 or 85. That will give you a nice scope hole without having to angle drill.

On another subject...

I was called out to a local university to drill open the safe shown in photograph seven. As you can see, it was the



7. A badly damaged safe found at a local university.

subject of a severe burglary attack involving an oxy-acetylene torch, an electric drill, a sledge hammer, and God knows what else. As usual, the bunglars botched the job. You know, I must have a deep-seated psychological problem, because I get almost giddy with delight whenever a muscle-brained bunglar spends a lot of time trying to force a safe open, and gets bested by the inanimate object. When will they learn? Proper tools, technique and talent will triumph every time over brute strength. The game is finesse, not force.

Everything had been pounded off, pried off, or burned off. The dial, ring, handle, hinge, and pressure system were all gone. Identification was a bit difficult, due to all the missing clues, but the torch attack had left some of the gold-leafing intact. I could make out "Herring-Hall-Marvin" on the upper edge of the body. So I consulted *The National Locksmith Guide to Safe Opening Vol. 4*, which covers antique safes exclusively, and found this safe on pages 132-133. But for some stupid reason, which I still fail to grasp, I center-punched and drilled at O instead of 75. Don't ask me why—I haven't a clue. I think I just spaced out. Way out there somewhere. And I paid for it.

Hall's and Herring-Hall-Marvin put some very respectable materials in their jeweler's chests and banker's safes. It was a backbreaker to get a hole in, because the safe was recessed into a brick wall, and my Black Bart lever rig kept bottoming out against the bricks. My rig was too long, so I cut a couple inches off the end and it fit perfectly. Now I had a rig that could apply pressure. But boy, did I have to work my fanny off to get a hole in that hummer of an HHM. Boy, that stuff was hard!

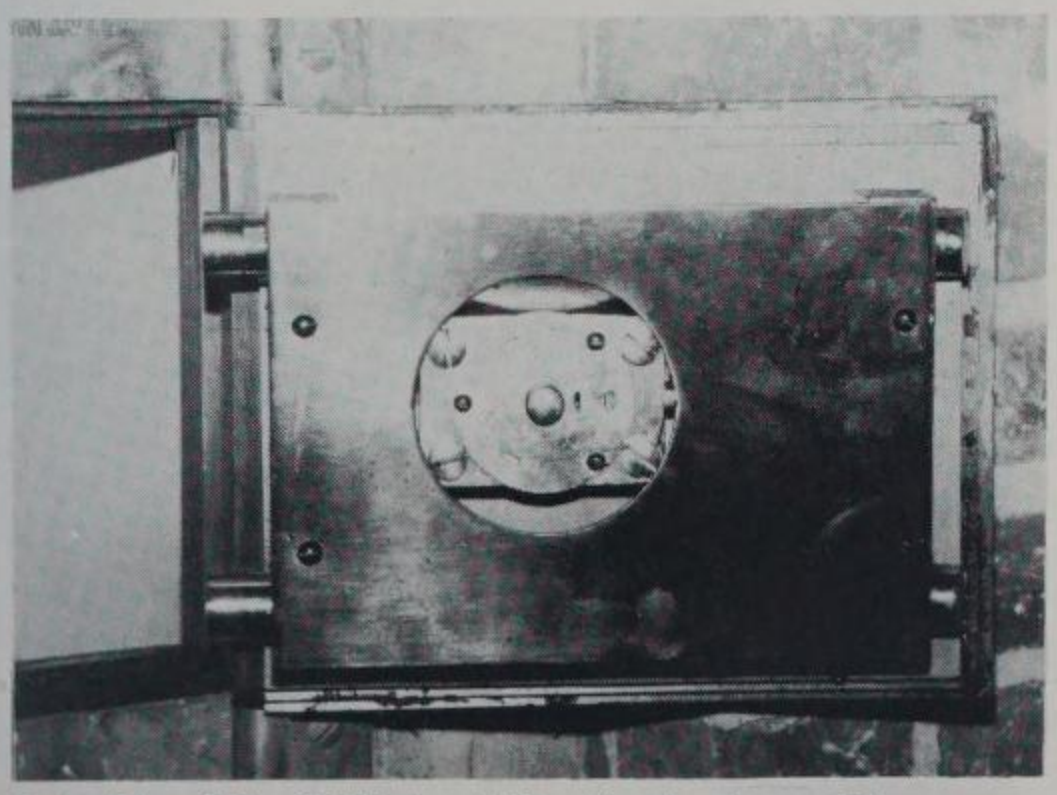
As exhausted as I was after getting the hole in, the last thing I wanted to do was transfer numbers around. But since I had made a misguided drill point selection, I had no choice—my hole was 25 numbers away from the tailpiece.

Inserting a scope into the hole, I could see the wheels perfectly. That was a relief. All I had to do now was attach my transferring tool to the spindle and coax those gates from zero over to 75. It sounds so simple. But sometimes transferring is a X*%&$¢#%@$!# of a job. Those of you who never have a problem will not understand this, so you might as well skip ahead to the next part of the article. However, those of you who, like me, are merely mortal and occasionally have difficulty transferring numbers, will probably identify with the problem. In my case, I seem to go through phases. I can go for weeks and not have a problem. Then the my luck changes and I can't transfer my way out of a paper bag. Well, this appeared to be one of those days.

I attached a 10" pair of vice grips onto the handle shaft, and each time I dialed a transferring combination I used the vice grip as a handle. I must have given the grips a hundred or so turns before I finally let out a quasi-expletive under my breath. The safe would not open. Then my imagination began to run wild. I am not kidding; sometimes when a job is going poorly, I start to hallucinate worst possible case scenarios: Maybe the boltwork is frozen; maybe the boltwork is melted! Maybe the tailpiece is stuck; maybe it got so hot it expanded and won't fit into the gates! All kinds of wild, unlikely scenarios ran through my mind.

Finally I settled down and began to think rationally again. I inserted the scope back in the hole to verify my numbers. And then it hit me. "Oh you invincibly ignorant idiot!" I barked at myself. No wonder it wouldn't open. On my transferring tool, you have to be careful when reading the numbers. I had counted three digits over from 60 and assumed the number I was looking at was 63, when in actuality the number was 57 (which is also three digits away from 60). That's what I get for approaching the job on automatic pilot, rather than paying attention to important details such as the proper drill-point (which would have made transferring unnecessary), and making sure to read the actual number on the transferring tool. All a guy has to do is pay attention. You can bet this guy will be paying close attention (at least until I slip into auto-pilot again).

Once I realized what I had done, it was a simple matter to use 57 instead of 63 as an original number. I then added 25 numbers to each number of the combination I had obtained through the hole at 0. Adding 25 numbers transferred the wheel gates from O to 75, which is precisely where the tailpiece was patiently waiting. Next, I rotated the vice grip, retracting the boltwork. Now I just had to pull the door open. While I had been working away, someone had come up with the crane hinge, so I reattached it as best I could, and eased the door open.

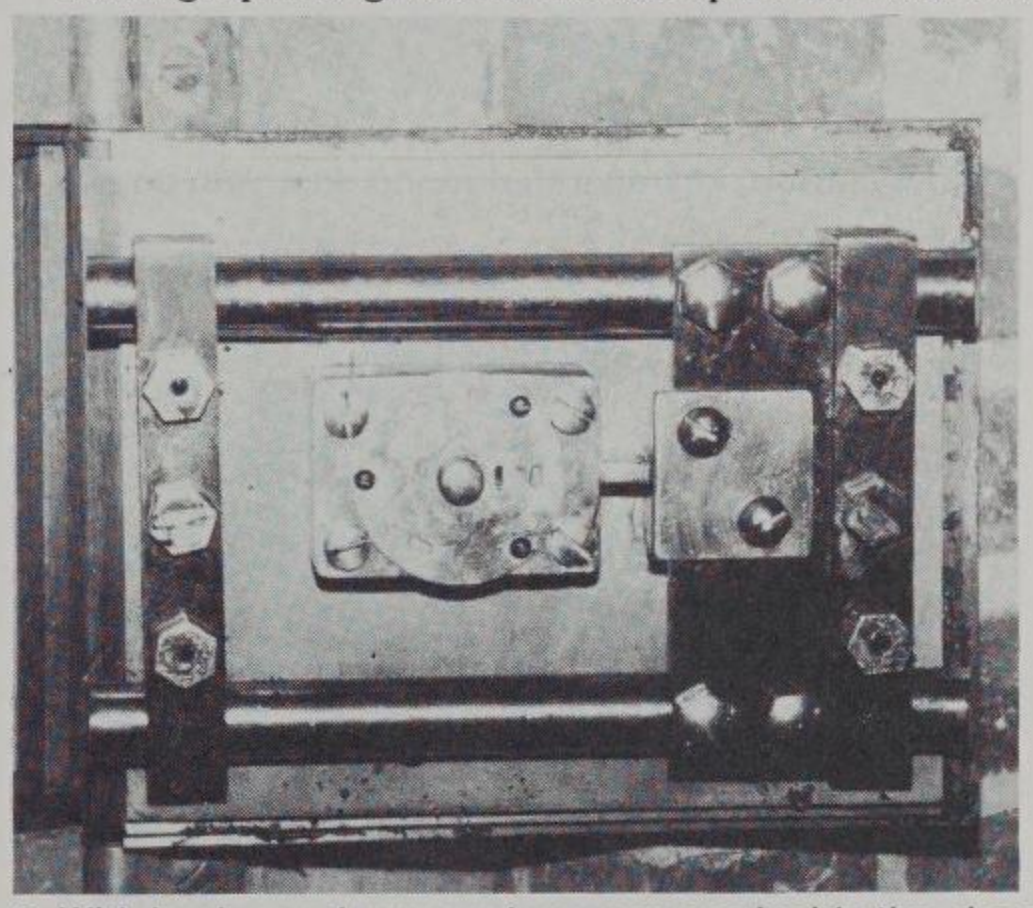


8. Inside of the HHM chest. See the back panel?

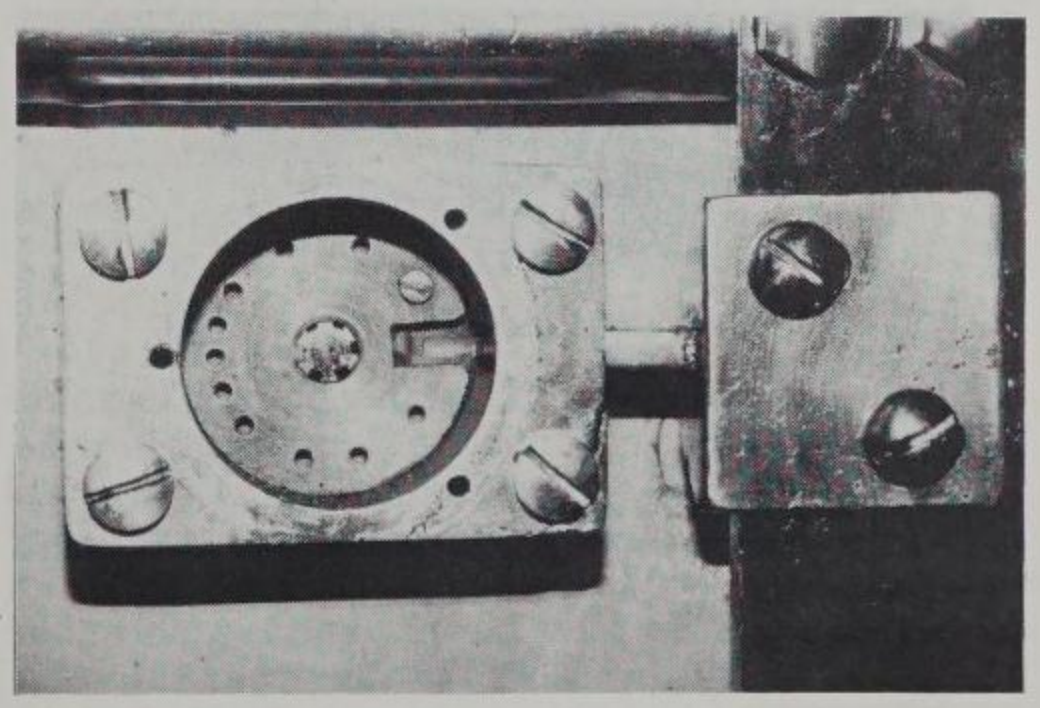
Photograph eight shows the inside of the Herring-Hall-Marvin jeweler's chest. Notice the uncommon presence of a back panel. Through the hole we can see the straight-tailpiece lock. The boltwork is in the retracted position.

In photograph nine the back panel has been removed, giving us a clear view inside the door. The lock is locked; the boltwork is in the extended position. As you can see, the tailpiece is held onto the boltbar with two screws.

Photograph 10 gives us a close-up of the lock and straight-tailpiece. In this photo, the driver gate is lined up with the tailpiece. For your information, the wheels are 1-15/16" in diameter, and the handle rotates clockwise to open. Boy, was I glad this job was history.



9. With back panel removed you can see inside the door.

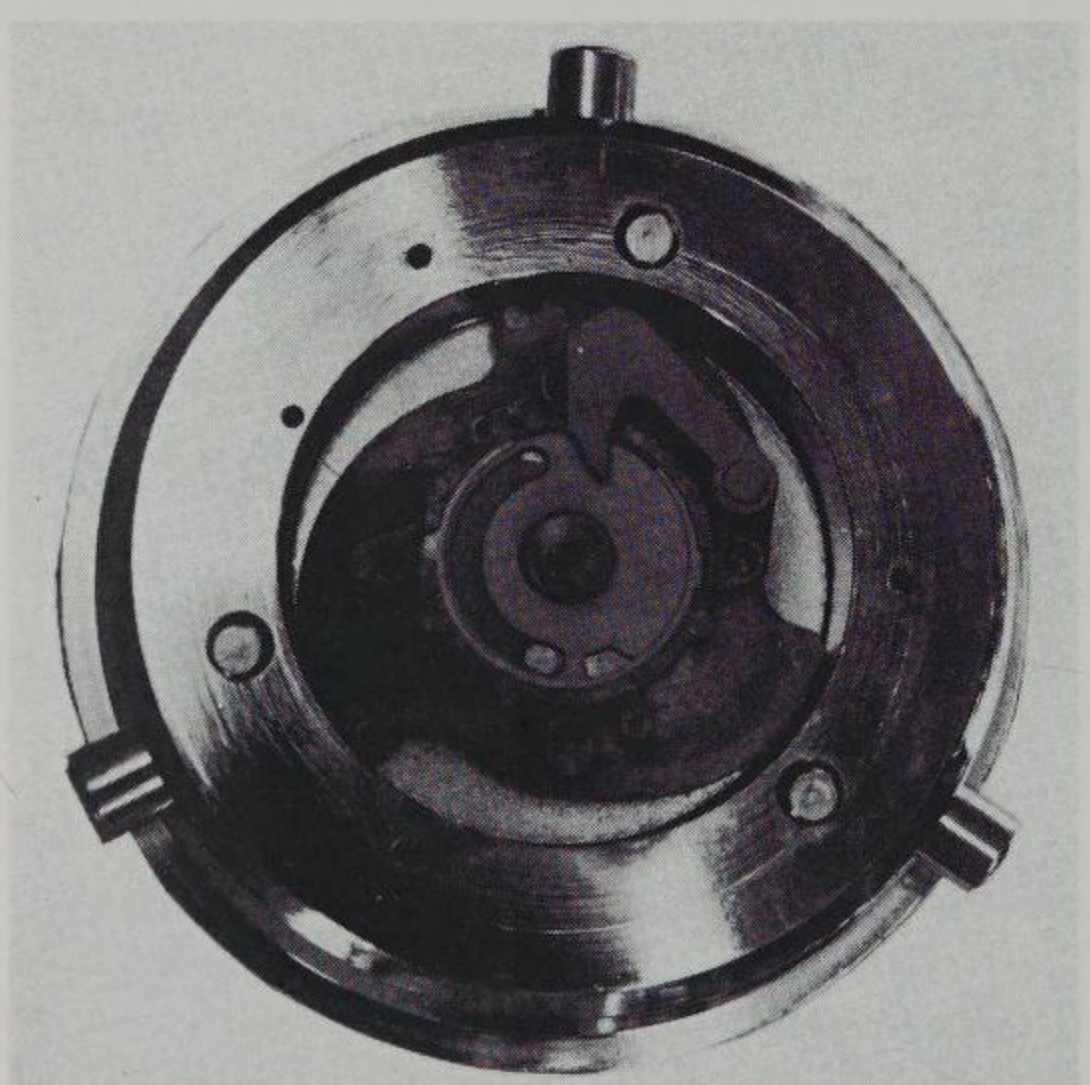


10. Close-up of the lock and straight tailpiece.

Now onto yet another topic...

After going through two openings this month, I thought I might share with you a little fabricating trick from Dave Richardson. This concerns protecting the keyhole on a LaGard key-operated round door. (*See photographs 11 and 12.*)

11. The LaGard key-operated round door with cover...



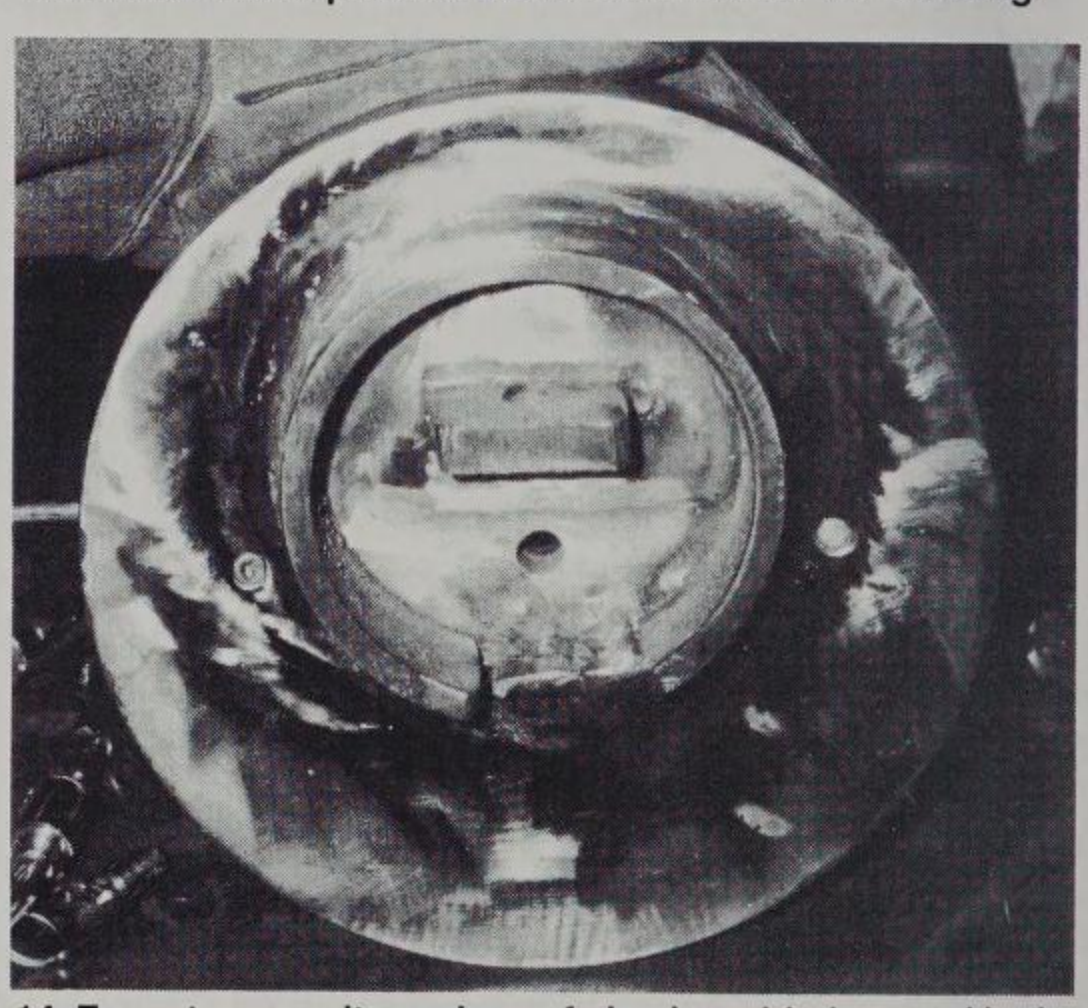
12. ...and with cover removed.

Dave had a customer that was having problems with kids stuffing assorted and sundry objects into the keyhole, causing a string of lockouts. Now Dave *likes* lockouts—they pay for lunch, but he *loves* happy customers—they pay the mortgage. So he came up with an innovative way to solve his customer's problem: he installed a "solid high-defense, anti-fibre optic borescope escutcheon cover lock." In other words he blocked the keyhole with an American 2000 series padlock!

Let's take a look at how Dave accomplished this on the LaGard round door. In photograph 13 Dave is laying a fabricated piece onto the door to be welded in place. This piece performs two functions. First, it contains the padlock "eye" that the shackle will go through; and second, the flat part against the door acts as a stairstep for the padlock to rest on. Those of you familiar with the American 2000 will know that the back of the lock is not flat, but is stepped, thus the need to compensate to avoid rocking.

That piece would have been enough for most mortals. But Dave was concerned that the little vandals would start prying between the padlock and door, possibly causing

13. A fabricated piece is laid onto the door for welding.



14. For extra security, a piece of pipe is welded around lock.

15. The installed padlock.

16. The finished repair job; as good as factory.

problems. So he cut off a section of pipe, cut a slot in it, and welded it onto the door as a protective barrier around the padlock (*see photograph 14*). Notice the slot at the bottom of the circular barrier—this provides access to the keyhole of the padlock.

Photograph 15 shows the installation of the padlock. Access to the keyhole can be had through the slot in the barrier at the bottom of the padlock. In this photo, the door is yet to be sanded and painted.

In photograph 16 we have the finished product. It looks "factory" doesn't it! The entire door is painted black, which creates a nice contrast with chrome color of the padlock and handle. A very professional fabrication job.

Well, that about wraps it up for this month. Many thanks to Dave Labarge and Dave Richardson for their input. See ya next month. Oh, I can't wait! §

by Dave McOmie

Drilling Mosler's Relsom

"After a fruitless effort of trying to burgle a similar Mosler, Willy Sutton scrawled, 'Too Tough,' on the door."

"Hi Dave, gotta safe for you to whack."

"Great Don, uh, what is it?"

"A Mosler lug door.

"Oh, it must be my lucky day. What's the problem?"

"I dunno for sure, but it's some kind of malfunction. Three locksmiths have already tried every dialing and troubleshooting trick in the book, and it won't open. Sounds like it'll have to be drilled."

When Don told me the name of the store that had the safe, I knew I was in for a battle. For many years this particular supermarket chain bought the meanest safes Mosler could make. And these safes were made with the meanest hardplate man has ever concocted: Relsom. So with Relsom on the brain, I dragged myself out into the Northwest rain, and proceeded down to Main street to meet my opponent.

Walking across the red carpet that the manager laid out for me, I could see the big bruiser over in his corner. (*See photograph 1.*) Yep, he is a big'un, about two feet in diameter, and probably has me outweighed by a few pounds. Gosh, if this were the Olympics, this big bruiser would have to find somebody in his own weight class to wrestle with. Oh well, the bigger they are, the harder they fall (translation: the bigger they are, the easier time the customer has swallowing the gawdawful bill he is going to receive).

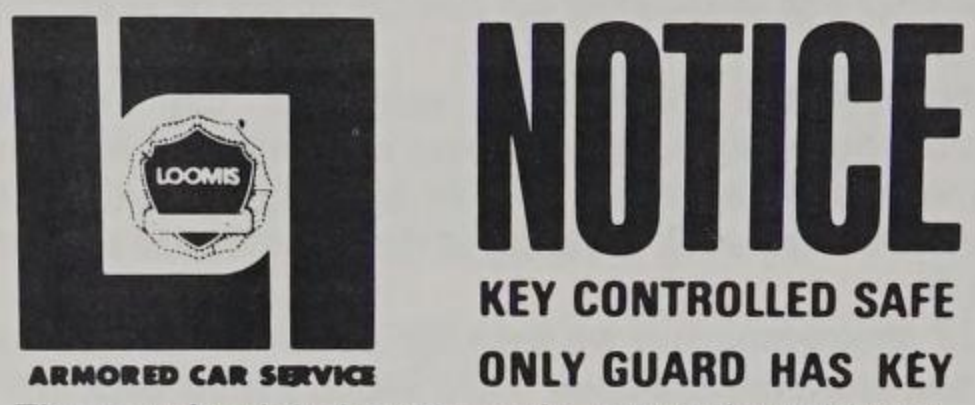
Notice the handle is missing. One of the troubleshooters got a little carried away with the deadblow hammer and sheared it off. No biggee. When the time comes, we can stick anything in the handle gear to rotate the door.

In photograph two we have the decal that sent shivers up and down the infamous Willie Sutton's spine back in the 1950s. In fact, after trying all one night to burgle a similar Mosler, Sutton gave up and scrawled "TOO TOUGH" across the door. It was probably Sutton's highly publicized experience that gave rise to Dale Libby's "I Ain't Afraid Of No Mosler" war cry. I myself will confess to not being *afraid* of any Mosler, but dang, Mosler sure makes us earn our money. They ain't easy.

1. The object of Dave's opening attempt this month.

1. The object of Dave's opening attempt this month.

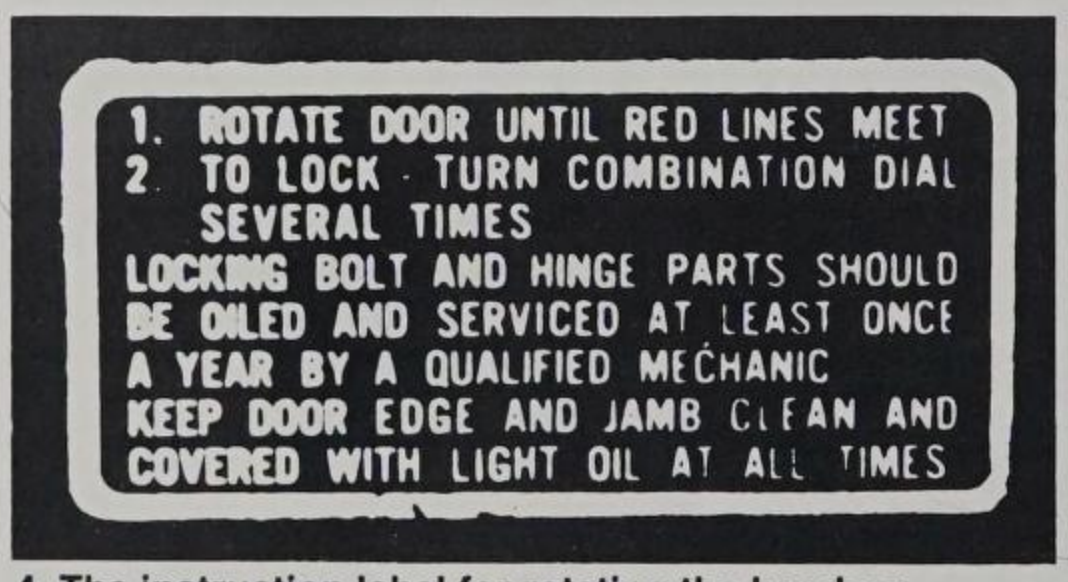
In photograph three we have a warning to would-be robbers (not burglars), telling them that any attempt to force the manager to open the safe will be futile, because only the armed guard has the key. My only question is: what key? Normally this decal would signify the presence of a keylocking dial, but this safe manifestly does not have one. Perhaps it means an inner door. I am not sure. Perhaps it is merely a bluff. I can identify with that; heck, I have used alarm company stickers on the windows of every home I have owned, even though there was never an alarm. What the hay, if it deters, use it!



3. The warning label on the safe, meant for robbers.

Photograph four shows us the instructions for rotating the lug door—instructions that not one customer in a thousand has ever read *and* followed. Especially the part about yearly service—what a joke!

Okay, with those prefatory comments out of the way, let's identify this bruiser and get it open. Photograph five is of the hinge. It is instantly identifiable as an old-style hinge, which tells us that this safe was manufactured before the



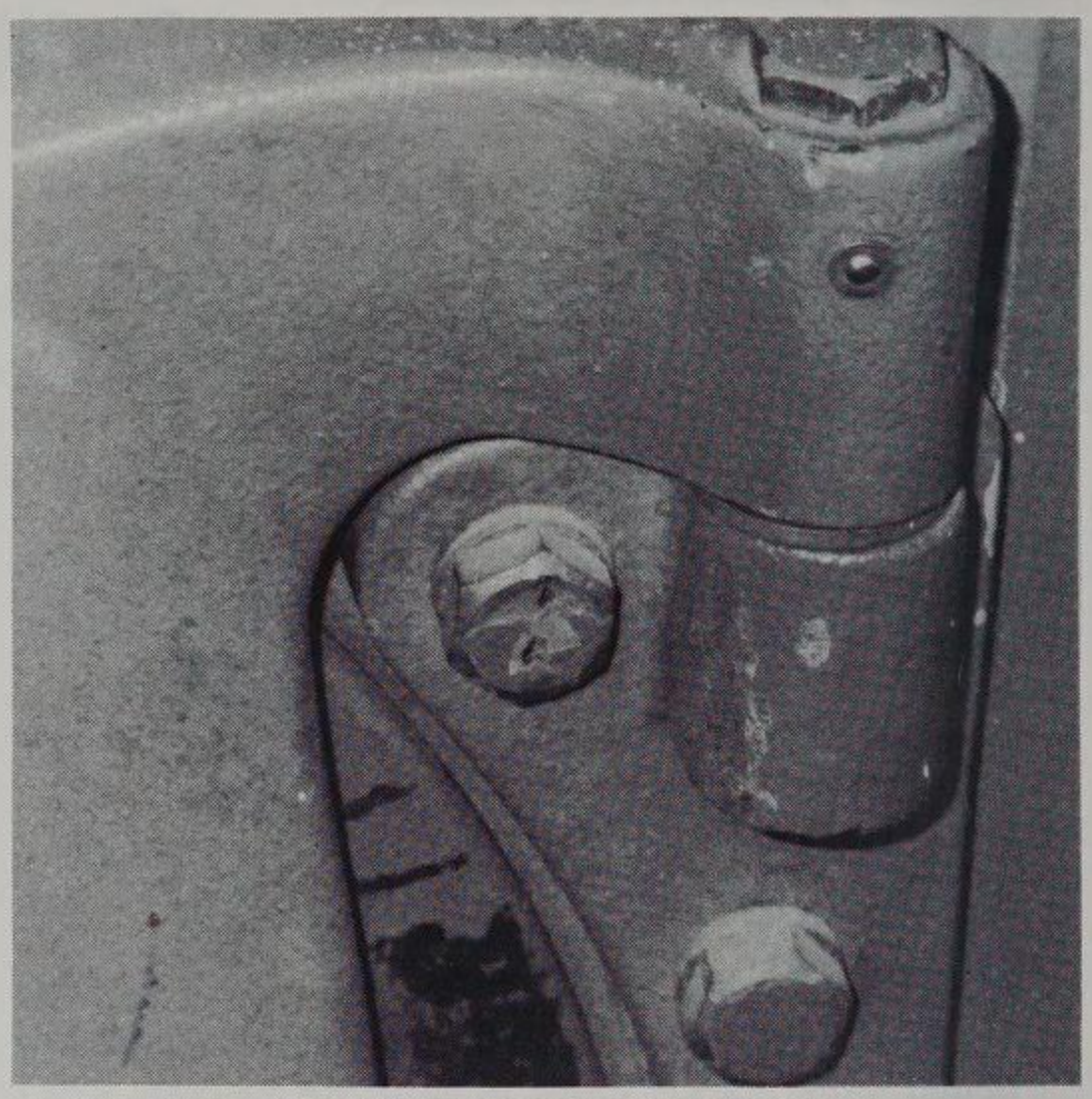
4. The instruction label for rotating the lug door.

302 lock was on the market. The color (light green with a hint of gray) tells us late 1950s or early 1960s. This makes the lock most likely a 120. But let's not guess; let's move in for a closer look.

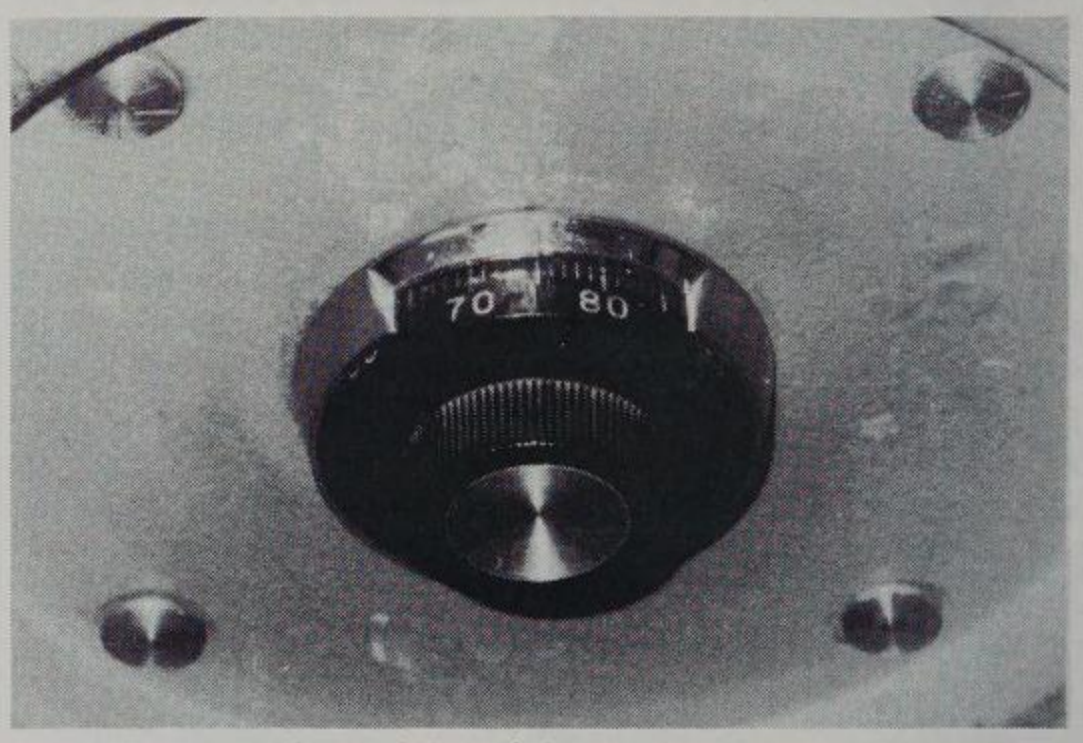
In photograph six we have a close-up of the dial. Most likely a replacement, since most Mosler lug doors that came from the factory with 120 locks also came with chrome dials, not plastic dials. Twirling the dial, I try to pull it out at zero and at fifty. It does not come out. This tells me that the lock is not a manipulation resistant lock, but is a CD-120, a group 2 lock. Notice the four caps in this photo. These caps are covering up the bearing plate screws which we will be removing shortly.

Even though several other competent mechanics had given a shot at dialing this bruiser open, I still have to satisfy myself that it indeed will not dial open. In five minutes I am completely satisfied. Let's prepare to drill.

The first thing we have to do on a Mosler lug door is



5. The hinge, identifiable as an old-style hinge.



6. A close-up view of the dial.

remove the dial. There are a lot of reasons for this. First and foremost, to remove the bearing plate requires that the dial be removed first. Secondly, if we do not remove the dial, our hole will be in plain sight, rather than under the dial ring and/or the bearing plate. This makes doing a cosmetically acceptable repair extremely difficult. Third, staying outside the dial ring limits the opening options dramatically. And finally, removing the dial, ring, and bearing plate allows us to do our drilling right through the door, without having to put a hole in the bearing plate.

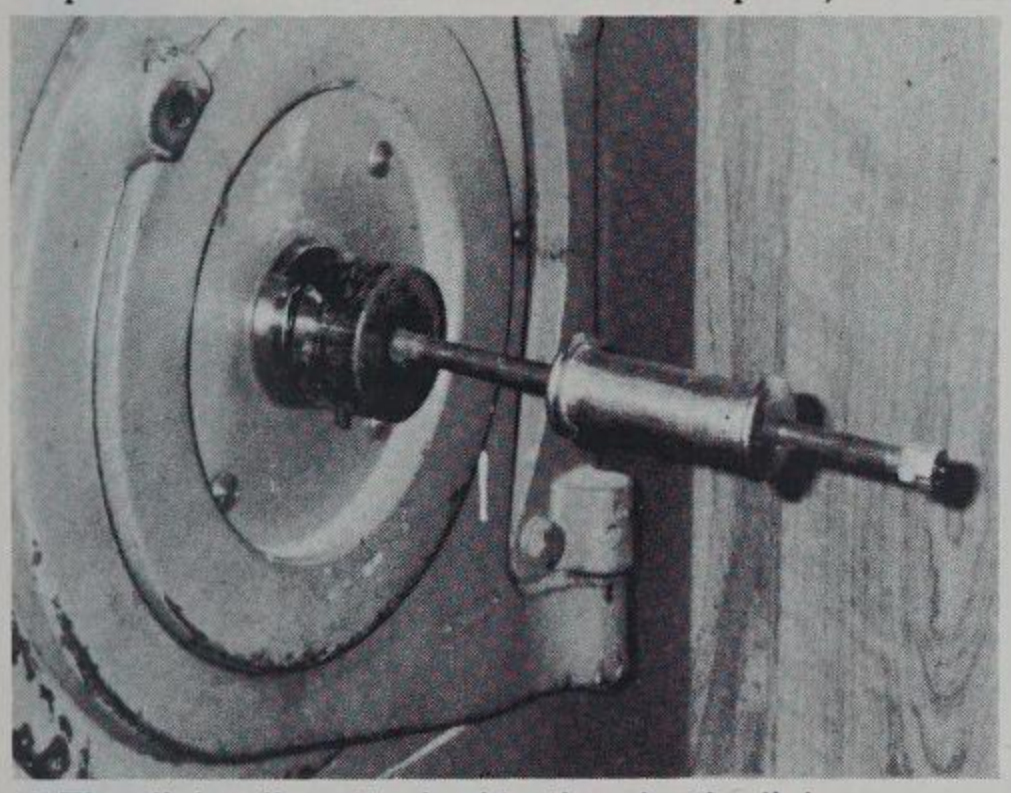
So we want to remove the dial, but what is the best way to remove it? Here is a simple rule to follow for removing Mosler dials: If the dial is plastic, then slam it off with a dial puller. The plastic dials come off very easily, and can be epoxied back on, no problem. If the dial is steel, then press it off, *do not* slam it off. (I have covered this technique in detail in past issues. If anyone wants to brush up on it, look back at the March 1989 issue of *The National Locksmith*).

I should clarify why we *do not* pull the steel dials. It is for this reason: Mosler's steel dials do not come off easily. Some are pinned; but even the ones that aren't pinned require a lot of whacking and slamming of the puller to get them off. And that is the problem. Each time you give the

slide-weight on the puller a good slam, it tries to pull the drive cam right through the spindle hole. This will cave in the front of the lockcase, and can cause big problems with the opening. However, *this is not a problem for the plastic dials. You can slam them off with impunity.*

The dial on this safe is plastic, so the trusty old dial puller is attached to it. (*See photograph 7.*) One whack on the puller and the dial flies off obediently.

With the dial removed, we turn our attention to the bearing plate screws. The four little caps covering the bearing plate screws are unscrewed, exposing the four 12-point screws that hold the bearing plate onto the door. The best tool to have in your tool box for removing these is a 12-point thin-wall socket. With socket in place, the bearing

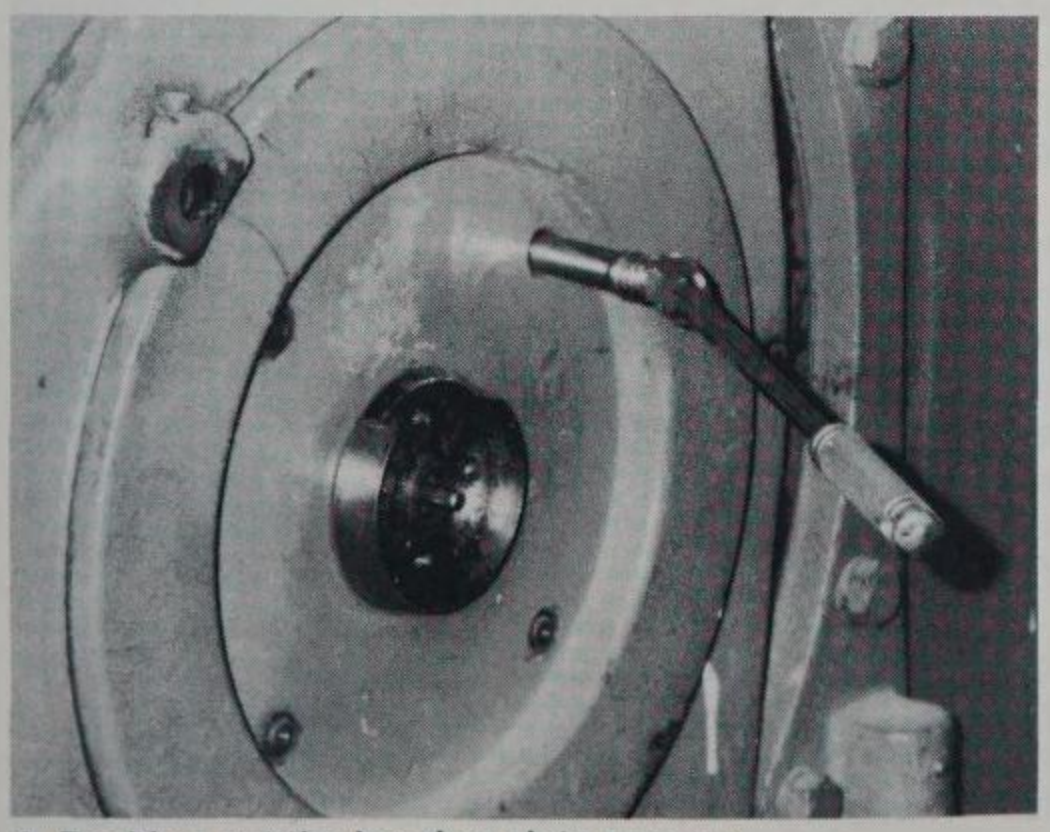


7. The dial puller attached to the plastic dial.

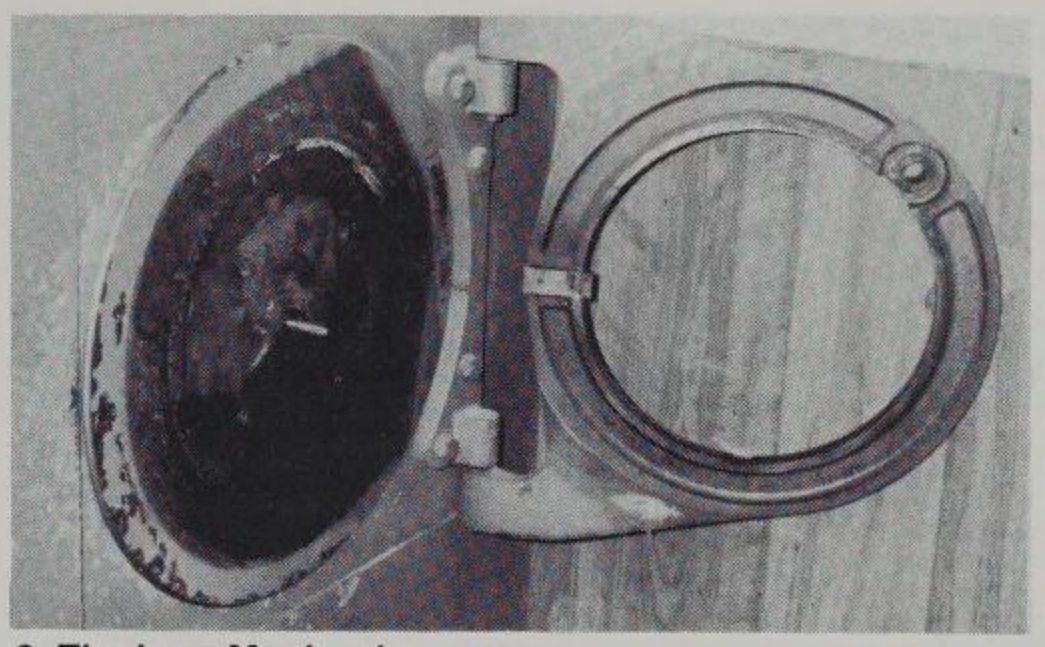
plate screws are backed out one at a time. (*See photograph 8.*)

With the bearing plate screws removed, we can gently slide the hinge and bearing plate away from the door. Carefully we set the bearing plate on the floor so it does not fall out of the hinge and injure someone's big toe. In photograph nine we can see the bare (bear?) door of the Mosler waiting for our drill to knock on Mr. Relsom's door.

At this point we need to begin deducing a drill point. But first we need to know what way the CD-120 combination lock is mounted. Most old-style Mosler lug doors have the lock mounted RH. But I know from



8. Backing out the bearing plate screws.



9. The bare Mosler door.

experience that most of these particular doors that Mosler built for this particular chain of supermarkets use a LH mounted lock. So, with the handing of the lock settled, we need now to figure out which opening technique to use so we can decide on a drill point. On a malfunctioning 120 in a lug door there are only three viable choices: (1) Side-drill through the hinge side to punch back the locking bolt. This was not feasible because the big bruiser was up against a wall in a tiny little office. (2) Drill the lever post off. With the lever post removed we can take an ice pick and move the lockbolt slide assembly to the retracted position. This is a possibility. (3) Drill for the hook-type lockbolt on the 120. We can pull out the relocker spring and probe the main locking bolt back. This one is also a possibility.

So which one, (2) or (3)? Glancing down at the door, I notice that there are obvious repair marks on the door in the general vicinity of the hookbolt. Hmmm...most people do not make very good repairs; should we try to drill through it? After all, the chances are that even if the repair is a good one, that it won't be nearly as difficult to drill as Relsom is.

Okay, let's go for it! But we cannot go off half-cocked; we must be patient and very precise. On a 120 lock, the distance from the center of the dial over to the hookbolt is 2-3/8." That is exactly where we want to drill: 2-3/8" RC. So the drill point is measured, double-checked, marked, triple-checked, center-punched and quadruple-checked. Friends, this is the most important part of the opening, making sure the drill point is perfect. An erroneous drill point can make for hours of excruciating but fruitless labor, so let's get it right the first time.

With all the preliminaries complete and correct, we can fire up our drill motor. Vrooom, the Hornet makes quick work out of the mild steel and then the thick layer of copper. This tells us that we are not drilling through the other guy's hole. (As it turned out, the other guy's hole was a mile off—no thanks). After the copper is penetrated, progress comes to a screeching halt. I peer in the hole and groan. Yep, it is the rude Mr. Relsom, who never learned about things like etiquette and hospitality, and probably never will. Some people seem to float through their whole life and never develop good manners and a sense of civility. Certainly Mr. Relsom is one of those. He just stands there, blocking the doorway and refuses to let anyone in. How rude! So it becomes a war of attrition: I am determined to get in, and Mr. Rude is determined to keep me out.

What are the possible ways of getting in? (1) Mini-lance? No thanks, not in this tiny little office. (2) Diamond-

tipped hole saw? Yes, but unfortunately I am out of stock. (3) Drill and punch? Yep, it is time for the grunt labor to begin. So I drill and punch, punch and drill, drill and punch, punch and drill, drill and drill and drill, and punch and punch and punch. AAAARGGHHHHHHH I hate you Mr. Relsom!!! It is you and me to the bitter end. When this thing is over, only one of us is going to be left standing. And by gawrsh, I am not going down for the count.

Just as I am about half-way through Mr. Relsom (he is a full 1/2" thick), my good buddy Don shows up:

"How's it going Dave?"

"Oh, just great Don. I can't think of a better way to spend a Friday night than by butting heads with Rude Relsom."

"You mean it's not open yet?"

"Don, don't say that; you sound like a customer!"

"Just kidding. Hey, do you need a hand?"

"No, but if you want to get some exercise, you can push on Black Bart while I take a picture."

"Black Bart...on Relsom? Geez Dave, isn't that kind of a mismatch?"

"Naw, I'm alternating quickly between punching and drilling and hammer-drilling. Any other kind of rig would be too time consuming to set up and take down."

"But Dave, I thought you were a big fan of low speed and heavy pressure when it comes to drilling Relsom."

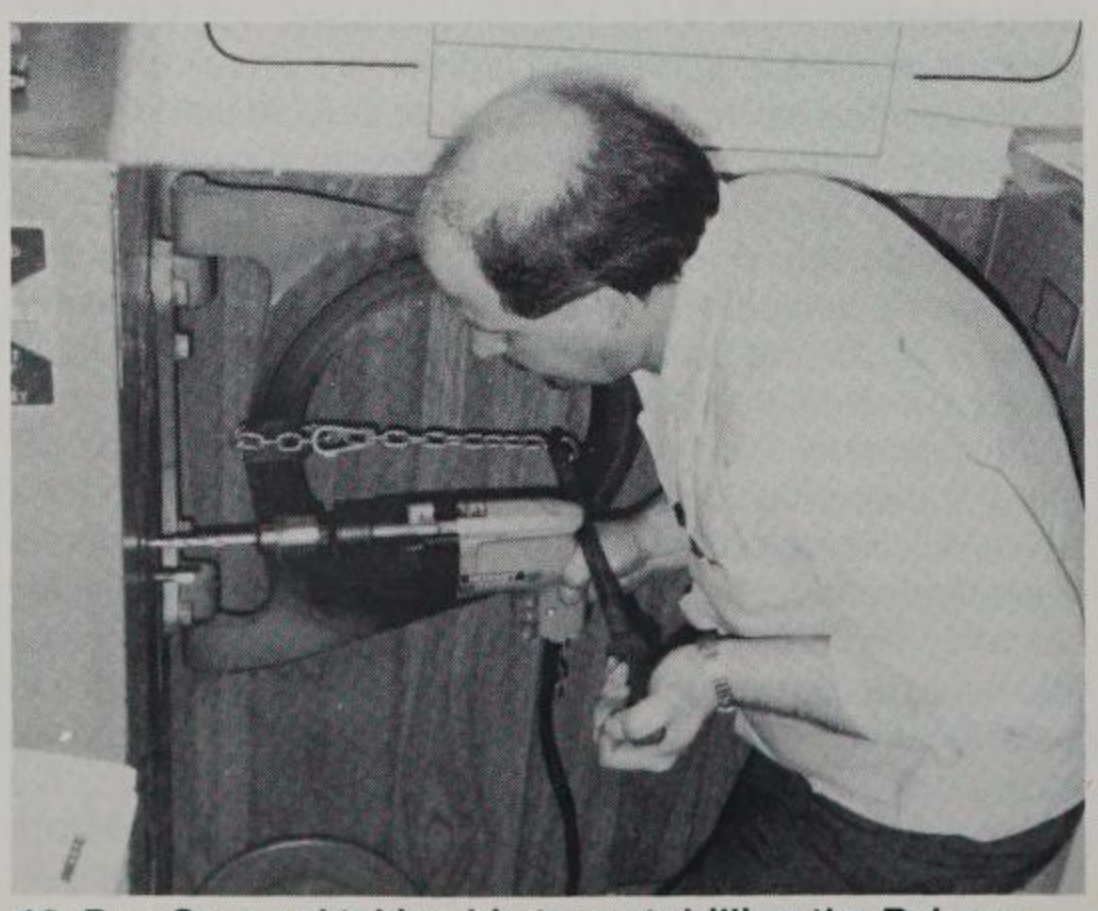
"All right Don, you win, you win. You know me too well; I might as well fess up. I left my fixed rigs in Portland, and the new chucks I just put in my Hornets are too big to fit in the bracket of my Strong Arm drill rig."

"Okay, I understand. I'll push on Black Bart, but only if you buy dinner."

"Deal."

So Don and I alternate spewing sweat and blood for the next hour to penetrate that last 1/4" of Relsom .(*See Don Spenard in action in photograph 10.*) Our 3/8" hole comes out right at the center of the main locking bolt. Carefully I drill through it and peek in. Rats. Our hole has drifted a little (Don must have done it!). The hookbolt is to the extreme left side of the hole, which will make pushing it out a little tougher than normal.

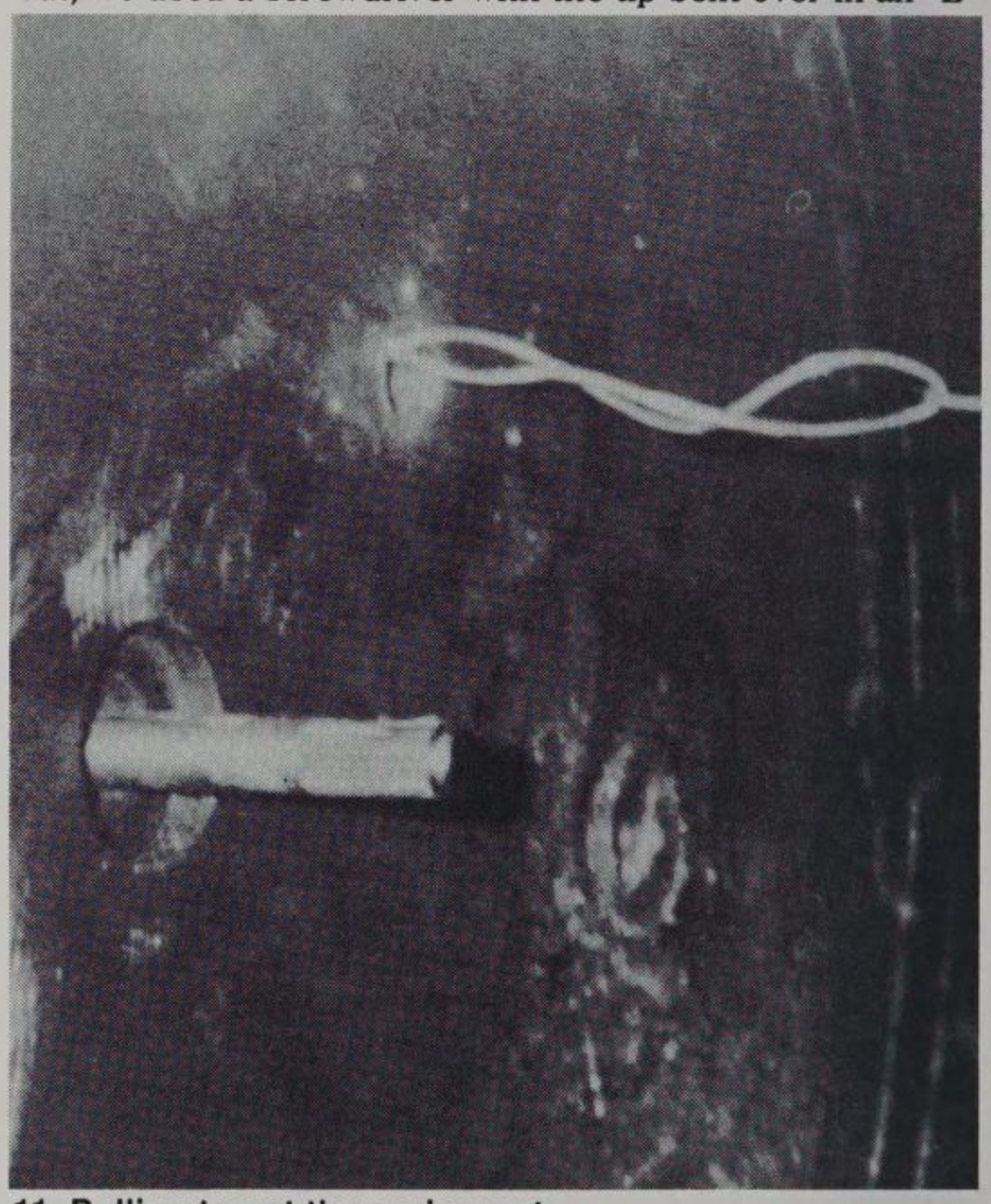
But first things first. Through the hole that we have drilled through the lockbolt and relocker, we pull the relocking spring out. This is not as easy as it sounds. You have to use a very stout wire or rod bent in a "U" to hook



10. Don Spenard taking his turn at drilling the Relsom.

the relocking spring. It will take a few jerks, but the spring will eventually come out. (*See photograph 11.*) This is very important, because we do not want to set the relocker off. Some people prefer to try and pin the relocker so it will not fire. Other people prefer to drill part way through the main locking bolt and then dimple it so the relocker cannot fire. After trying all the variations, I now prefer to pull the spring out if possible. It makes the job so much easier. After all, we are trying to do a lot through that little 3/8" hole; and trying to pin the bolt or dimple the bolt, and still leave room to drill through the bolt and push or punch out the hookbolt so we can then probe back the bolt...it is just too much. Just yank the spring out. Then you can push or punch the hookbolt out of the main locking bolt without worrying about that dastardly relocker going off on you.

And that is exactly what we did. After pulling the spring out, we used a screwdriver with the tip bent over in an "L"

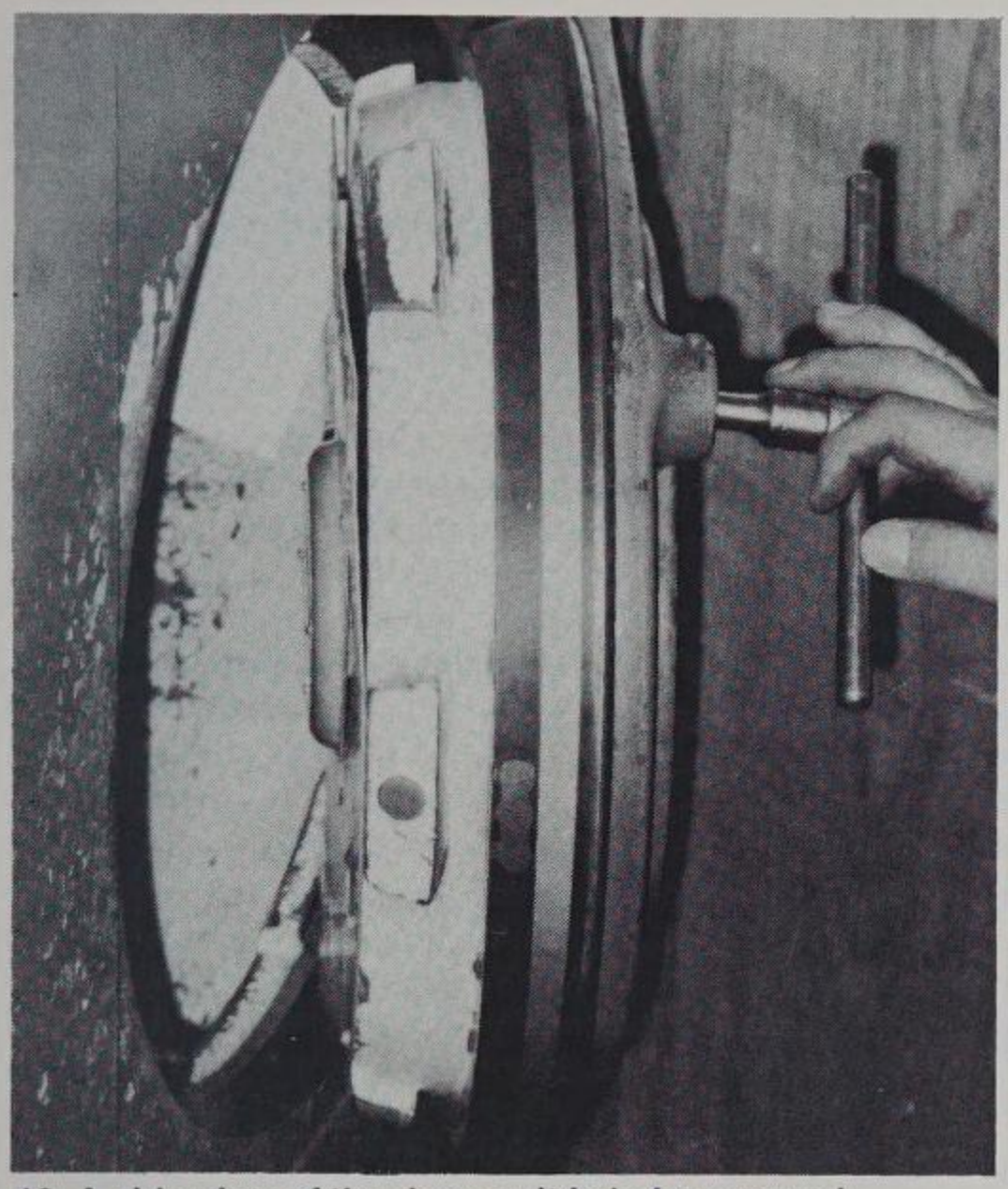


11. Pulling to get the spring out.

shape to gently punch the hookbolt out of the main locking bolt. Now, with nothing blocking the main locking bolt from retracting, it was a simple matter to scratch it back with the ice pick.

Right now you apprentices listen up. When you get the main locking bolt back on a lug door, do not, I repeat *do not* rotate the door. If you do, as soon as the lugs on the door clear the lugs on the body, you will have a very heavy door tumbling toward your toes. No matter how much adrenaline is pumping through your veins, take the time to reattach the crane hinge and bearing plate. *Then* you can rotate the door without necessitating podiatric reconstructive surgery.

In photograph 12 we have a side-view of the door as it is coming open. Notice the thick layer of copper that gives the door its torch resistance. The round bolt that you see at the edge of the door is actually the relocking bolt. Notice how it is protected by three large Relsom pins inserted in

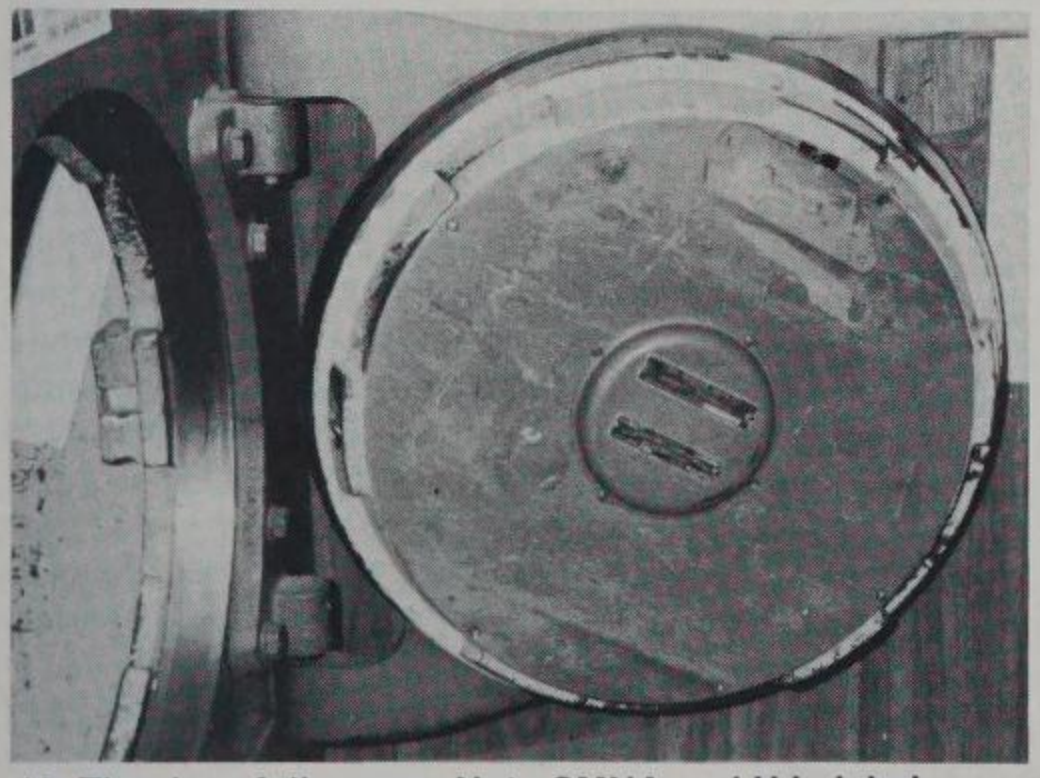


12. A side-view of the door as it is being opened.

the edge of the door.

Photograph 13 shows the door swung all the way open. On the little cover over the lock are two labels: an old SMNA label, and a U.L. Relocking Device label. But there is no U.L. Burglary Resistive label. There seldom is on the Mosler safes that were made for this chain. Having drilled literally dozens of them, I have always been puzzled by this, since these doors are tougher than any of the labeled TRTL-30's I have drilled. A few have labels under the hinges, but most do not. If anyone out there can enlighten me on this point, please write in care of the magazine.

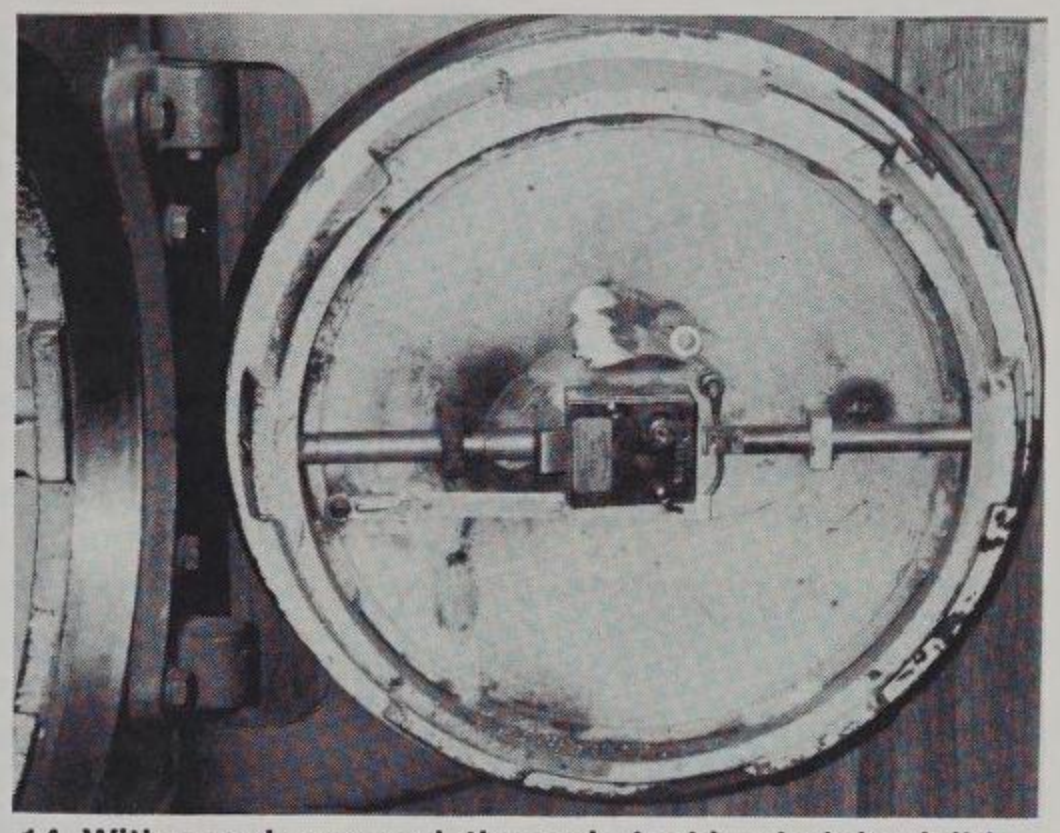
In photograph 14 the large back panel has been removed. We can see the main locking bolt at the left, the



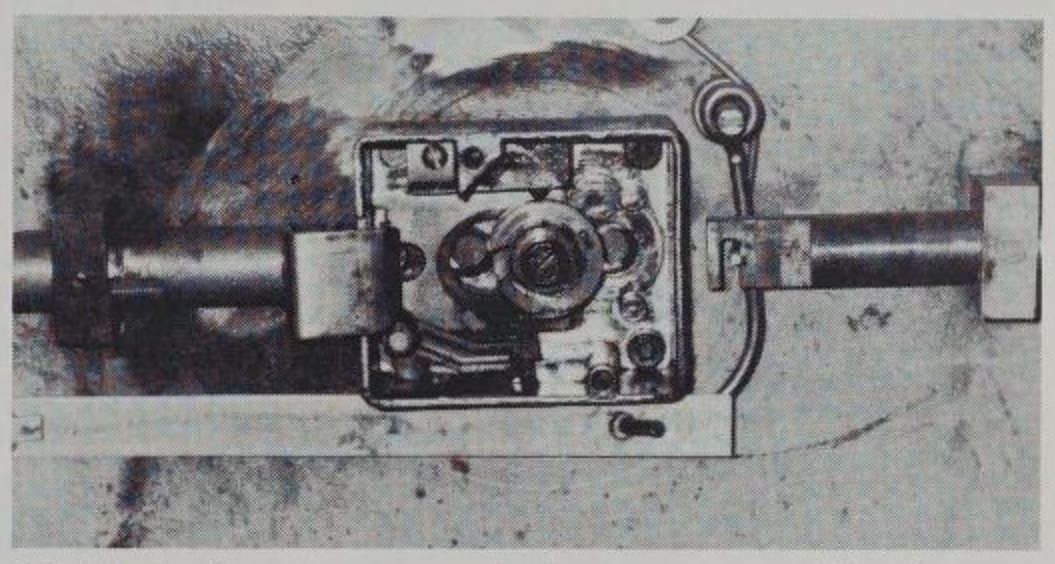
13. The door fully open. Note SMNA and U.L. label.

CD-120 in the middle, and the relocking bolt at the right.

Photograph 15 is a close-up of the lock. When this photo was taken, nothing had yet been touched. This is exactly what it looked like after it was opened. Although we cannot see it in this photo, the hookbolt is *not* engaged in the



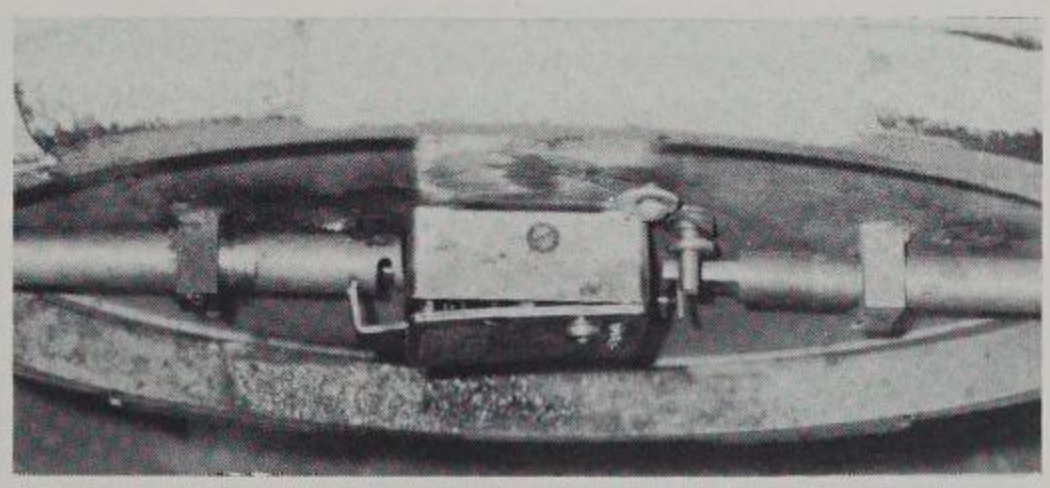
14. With panel removed, the main locking bolt is visible.



15. The lock as it appeared when we opened the door.

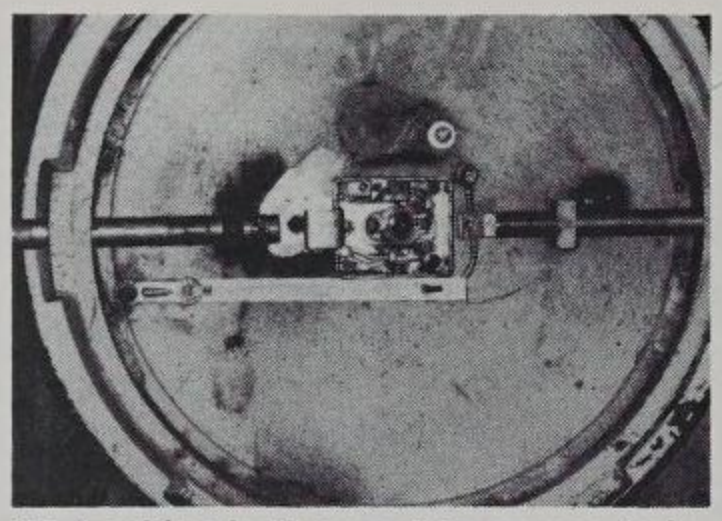
main locking bolt. Notice that a CD-120 mounted LH has its lever on the bottom.

Photograph 16 is a top-view, to give us a view of the hookbolt and the main locking bolt. Normally the hookbolt would engage in the slot in the main locking bolt. But remember, we punched it out of the slot so we could probe the main locking bolt back.



16. A top view giving a look at the main locking bolt.

In photograph 17, I have moved the main locking bolt far enough out of the way to allow us to observe the hole that opened the safe. As you can see, this hole just barely caught the edge of the hookbolt. Ideally the hole would be about 1/8" over toward the lockbolt. When you are using a hand-held lever rig, you always run the risk of having your hole drift a little, which is why it is so important to start with an exact drill point. If the drill point you mark is right on the money, then you have a little leeway in every direction. But if your drill point is a little off in one direction, and you drift off a little more in that same direction, you could be in big trouble. One more thing to

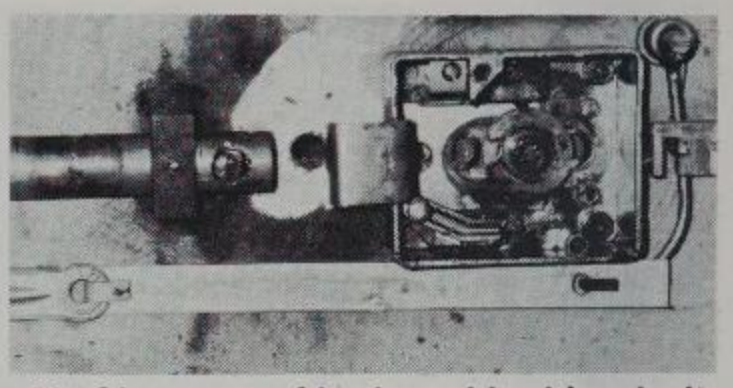


17. Locking bolt moved to expose hole.

notice in this photo: the fusible link, or thermal link as the younger guys are calling them these days. The link is about two inches below the main locking bolt over toward the edge of the door. It is connected to a metal strip that runs under the lock and in turn connects to a spring that is waiting for the order to fire the relocking bolt into the extended position.

In photograph 18 we have a close-up of the lock and main locking bolt. Here you can clearly see not only the hole that was drilled in the door, but the hole that was drilled in the main locking bolt as well. I should point out that I rotated the bolt 180 degrees to expose the hole. It was through that hole in the bolt that the relocking spring was hooked and jerked out. It was also through that hole that we punched back the hookbolt.

Well that about wraps up this long-winded, stem-winder of a story. But that is how it goes with a Mosler lug door loaded with Rude Relsom. Sometimes it seems an effort in futility to try and educate Mr. Relsom. No matter how many times we try and teach him



18. Close-up of lock and locking bolt.

things like culture and hospitality, he just never seems to catch on. The next time I run into Mr. Relsom, I'll bet he has completely forgotten the lesson he should have learned today. Undoubtedly he will just stand there, rude as ever, and try to deny me entrance. And undoubtedly he will put up a valiant but unsuccessful fight. What a life. See ya' next month. §

by Dave McOmie

Allied Safe Opening

"This month I would like to take a look at some photos of a few Allied safes made before Gary."

Oh how time flies. It seems like yesterday that I was driving around an Allied Safe & Vault service van, but in reality it was 10 years ago this month that I went independent. Luckily for me, the best source of information I had inside the company was Stan Fuher, who was preparing to man the technical assistance line at the Allied/Gary manufacturing plant in Spokane, Washington. Stan wasn't one of those guys who jealously guards every little secret (you know the type, the guy who steadfastly refuses to share information, on the misguided assumption that somehow this will make him more valuable and/or indispensable to his company. What this kind of guy continually fails to realize is that he is condemning himself to a perpetual state of near-ignorance by trying to be an island unto himself). Quite to the contrary, Stan was always willing to help.

I remember one time in particular, it was shortly after I had hung my own shingle. I thought I knew every thing there was to know about Gary safes; after all, I had drilled open every model and variation Gary had ever made at least ten times over. I knew tricks and techniques that I was sure no one else on the planet was privy to. But one day, after drilling open and repairing an old E-70 roller bolt round door, I could not get the blasted locking bolts to operate smoothly (or even smooth enough for me to make my exit). There I was, Mr. Know-It-All who could drill open any safe in the world, but I couldn't get this stupid little round hunk of damned steel to work smoothly. I was steaming, and out of ideas, so I called Stan. Well, as soon as I described the symptoms, Stan said "put a washer on the door post." That was it—problem solved.

In his career at Allied/Gary, Stan solved a lot of problems for a lot of us out in the field. Now he has retired, and boy, are we going to miss him. I especially will miss Stan because he and I had a very special common ground: we had both worked for sons of C.L. Corey (of *Diary of a Safeman* fame). Stan worked for Ray Corey before joining Allied in the mid-1950s; I worked for Eugene Corey before joining Allied in the mid-1970s. So every time I would call Stan, we would spend more time reminiscing about the Corey's than we would solving whatever problem or question I had called about.

I caught up with Stan and Betty Fuher at a recent convention. (*See photograph 1.*). They seem happy about the retirement, but I'll bet when they are sitting around the Friendly

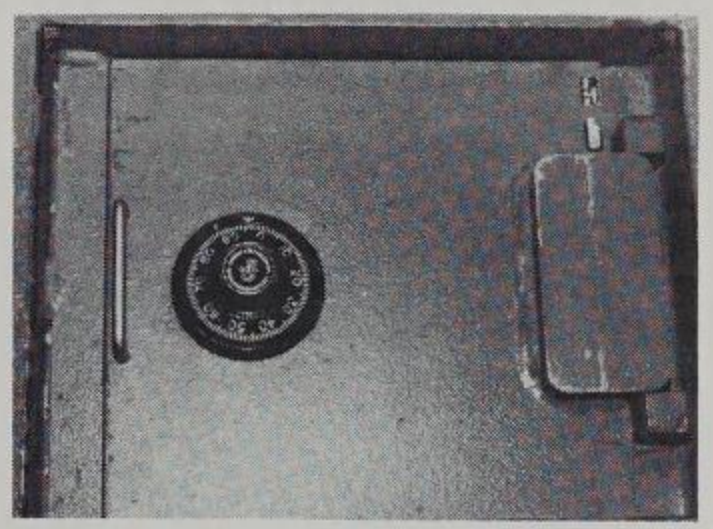
1. Stan and Betty Fuher.

Fishing Hole, that Stan will begin to miss chatting and helping out us guys (and gals) in the field.

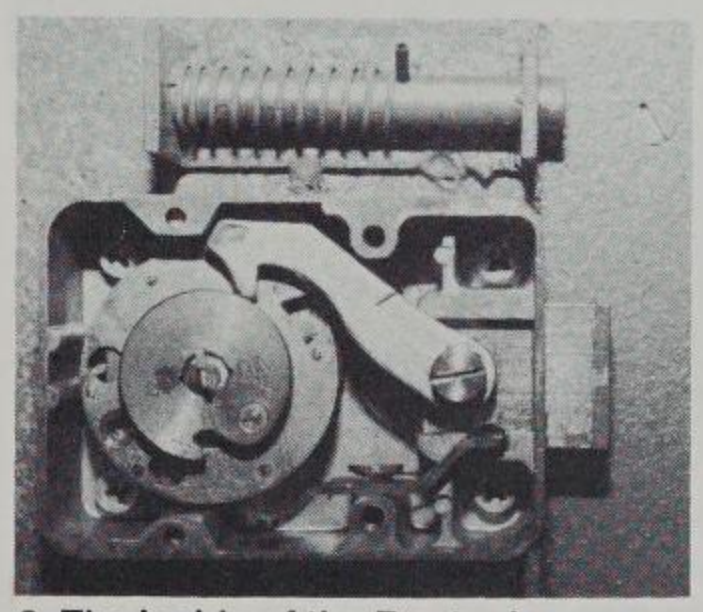
This month I would like to treat readers of *The National Locksmith* to some photos of a few Allied (not Gary) safes. Safes that were made by Allied before the acquisition of the Gary Safe Co. and most of which Stan is intimately familiar with. We will look at B-rate floor safes, C-rate free standing safes, and the infamous Allied TL-15.

In photograph two we have a simple B-rate door. There is no bolt-control handle because there is no boltwork. The pull handle to the left of the dial is only for pulling the door open after it is unlocked.

In photograph three we have the business end of the inside of the door-the lock and relocker. The lock is mounted RH, and the lockbolt is what holds the door physically locked;



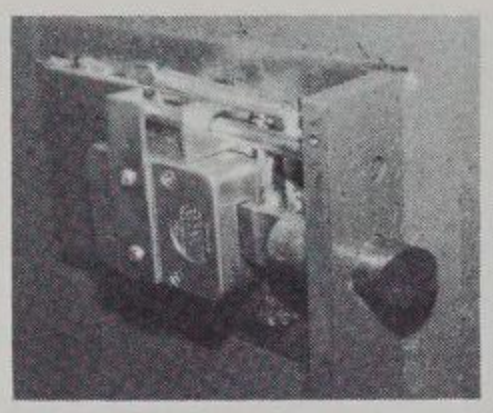
2. A simple B-rate door



3. The inside of the B-rate door.

there are no locking bolts. Notice the relocker running parallel to and above the lock—it is spring-loaded, and fires when the back cover of the lock is punched. Also notice the roll pin in the relocker; this roll pin prevents the

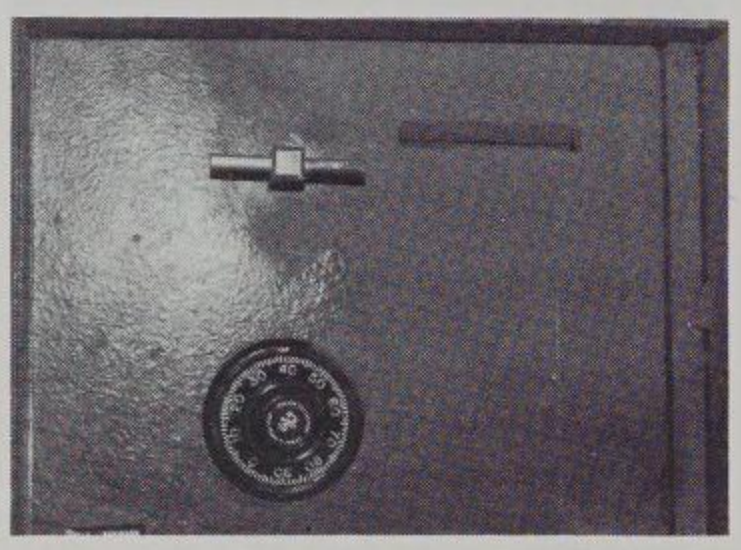
4. A free-standing version of photo 3.



5. The inside of the door. Note RH lock.

relocker from shooting forward too far and falling out.

In photograph four we have a C-rate free-standing version of the



6. Another B-rate floor safe. Note the placement of the dial to the door edge.

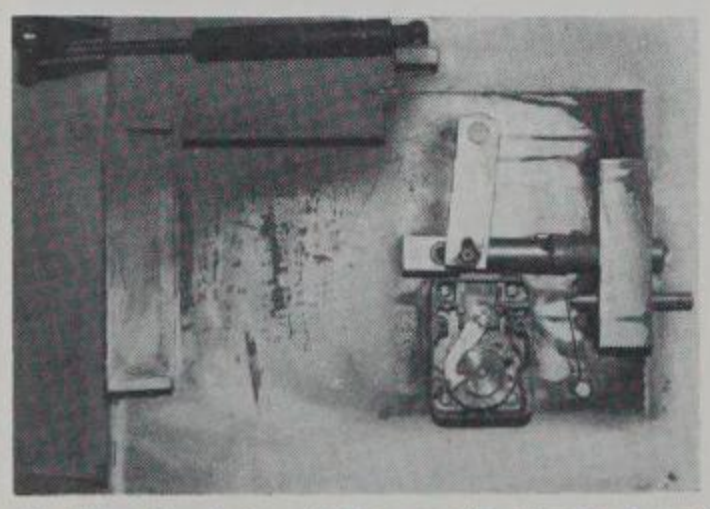
previous safe.

Photograph five shows us the inside of the door. Once again the lock is mounted RH, and the relocker runs parallel to and above the lock. The only real difference is that this door uses a locking bolt that is attached to the lockbolt of the lock. The relocker is also longer, and has a different spring arrangement than does the previous safe.

Photograph six is of a different style B-rate floor safe. Notice how close to the edge of the door the dial is.

The handle is mounted above the dial, and turns counter-clockwise to open.

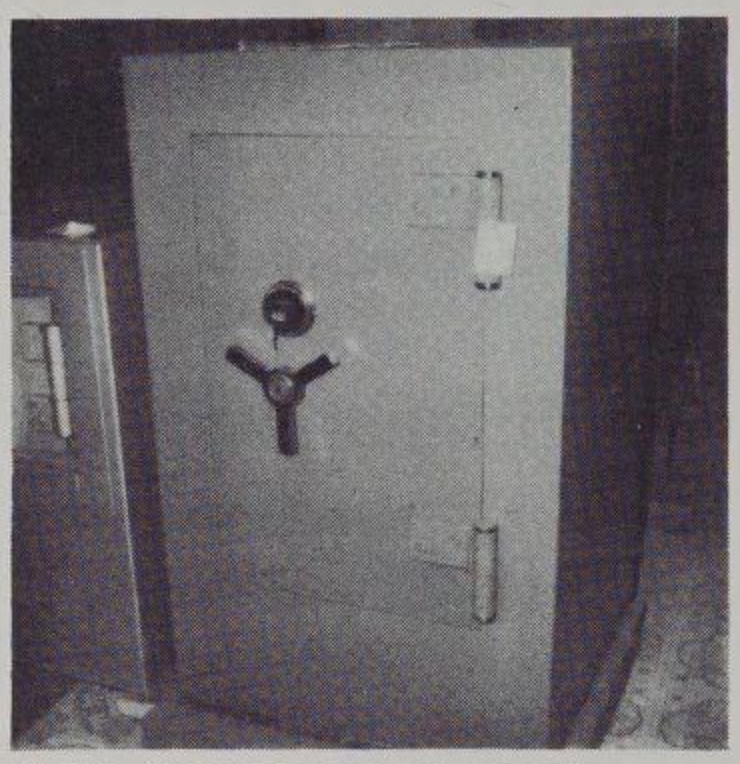
In photograph seven we have the inside of the door. In this photograph, the lockbolt and the locking bolt are both in the retracted position. Notice



7. The inside of the safe door. Lock-bolt and locking bolt are both retracted.

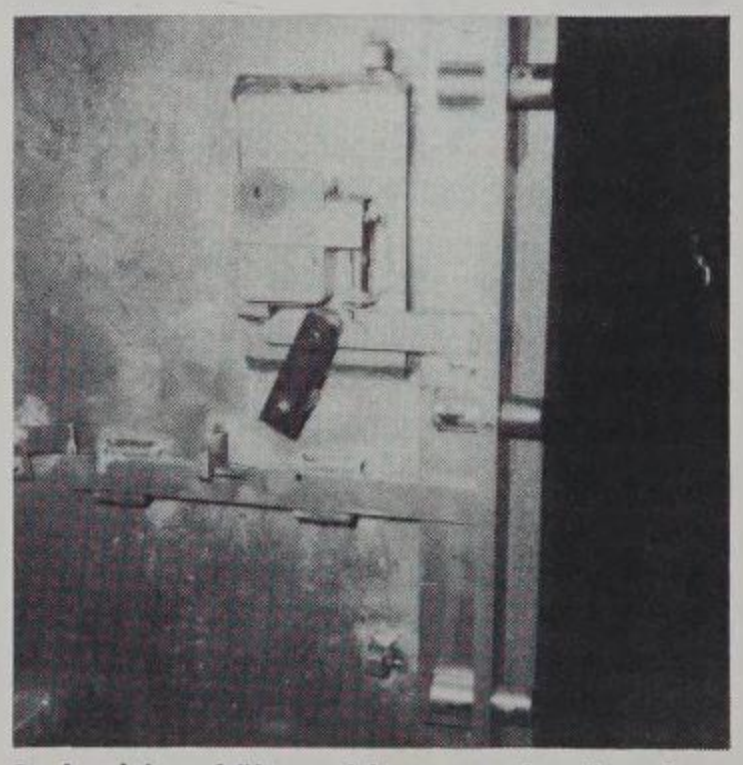
the relocker sticking out just below the locking bolt. This safe was one of the first to incorporate a gas-assisted hinge.

In photograph eight we have the "knuckle-cruncher." If you grab one of the upper handle spokes and rotate it to retract the boltwork, you will "crunch" your knuckles against the dial. Customers (and salesmen!) learned quickly to use the bottom spoke.



8. The "knuckle-cruncher" safe.

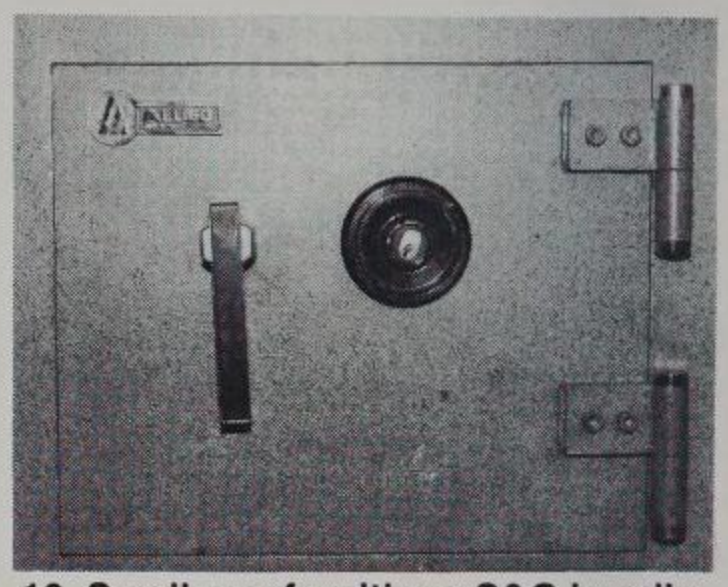
In photograph nine we have the inside of the "knucklecruncher." It



9. Inside of "knuckle-cruncher" safe.

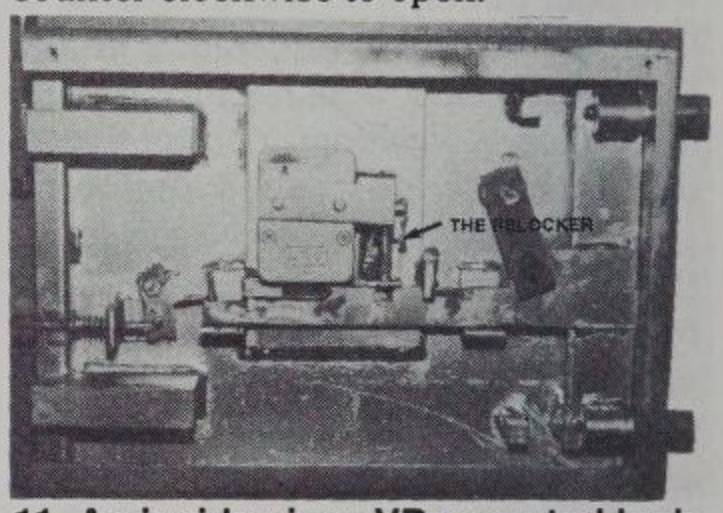
sure resembles a Gary, doesn't it? The lock is mounted VD, the relocker is just to the side of the lock, and the handle turns clockwise to open.

In photograph 10 we have a smaller version of the same safe. This door wasn't tall enough to have the handle below the dial, so it was installed to the left of the dial. Notice it is an S&G handle, not a tri-spoked knuckle-cruncher.



10. Smaller safe with an S&G handle.

Photograph 11 gives us an inside view, which is very much like the preceding safe. The lock is mounted VD, and the relocker is right along side it. The only significant difference is that the handle on this one rotates counter-clockwise to open.



11. An inside view; VD mounted lock.

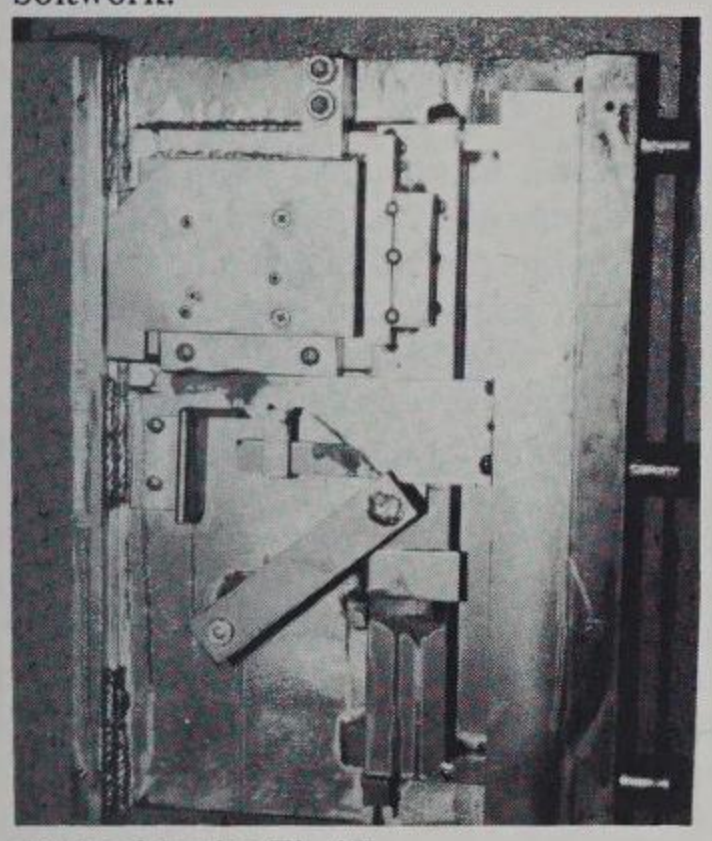
For your information, there were two different types of hardplate used in the preceding two doors. I verified this with John Dixon at the factory, who is taking Stan's place on the technical assistance line. If it is a C-rate, then the hardplate is of the work-hardening variety. In other words, if you start to drill and then stop before getting through the case-hardened surface, then it will be even harder when you put your drill back in the

12. The TL-15 safe. (Dial right of center.)

hole. If the safe is unlabeled TL-15 construction, then it has the famous Hartwell hardplate, which is very similar to Maxalloy. Thanks for the tip, John.

In photograph 12 we have moved from the B/C/E safes to the TL-15. Notice that the dial sits way right of center, with the handle beneath it.

Photograph 13 gives us an inside view with the relock detent still attached to the back of the lock. This safe bears a resemblance to an Amsec, doesn't it? It utilizes a RH mounted lock and a two-stage boltwork.

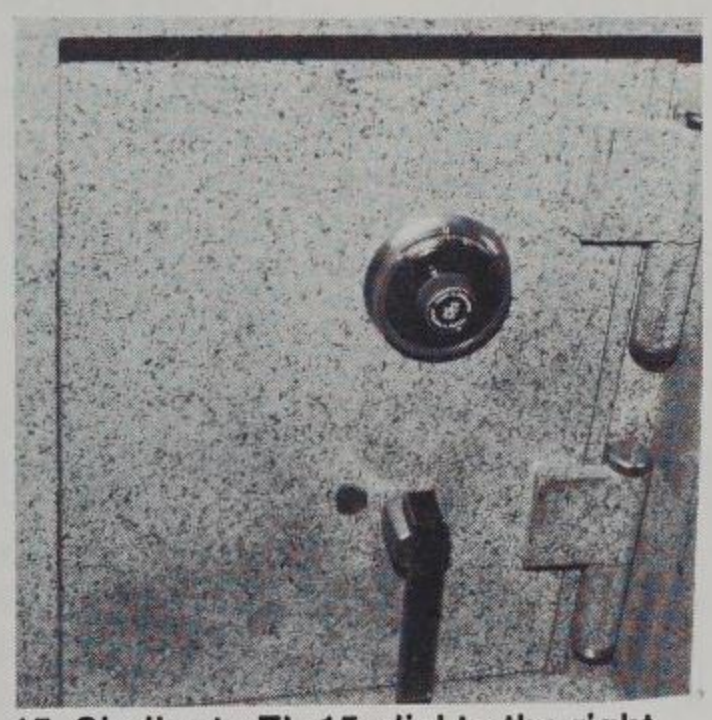


13. Inside the TL-15.

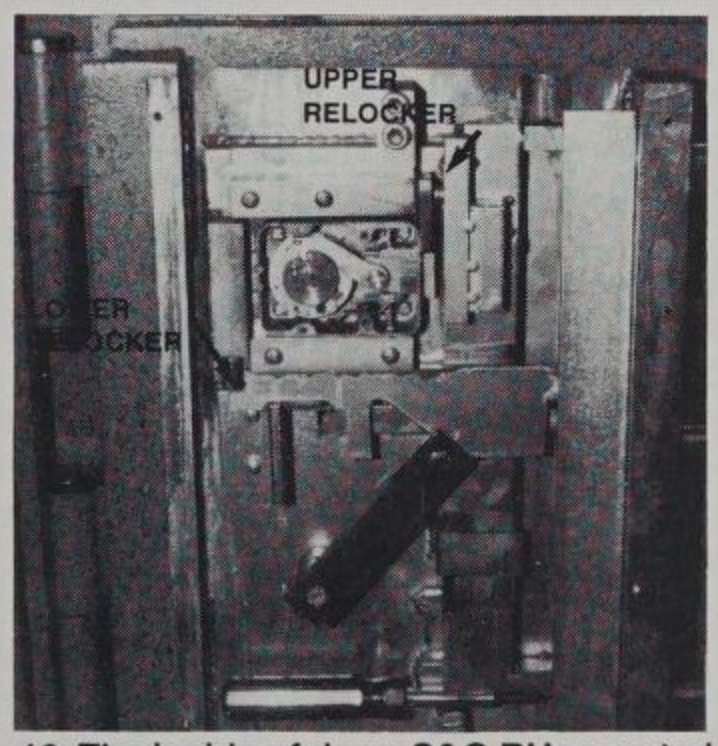
Photograph 14 gives us a close-up of the area around the lock with the back cover removed. There is a RH relocker above the lock, and a VD relocker just to the left of the lock (see arrows). Devious. I wouldn't be a bit surprised if using two dastardly relockers was Stan's idea.

The labeled TL-15 safes use BOTH hardplates discussed earlier. There is a plate of the work-hardening stuff, and right on the other side of that is a plate of Hartwell's carbide chip drill bit destroying stuff. Yechhh!

14. Close-up; back cover removed.



15. Similar to TL-15, dial to the right.

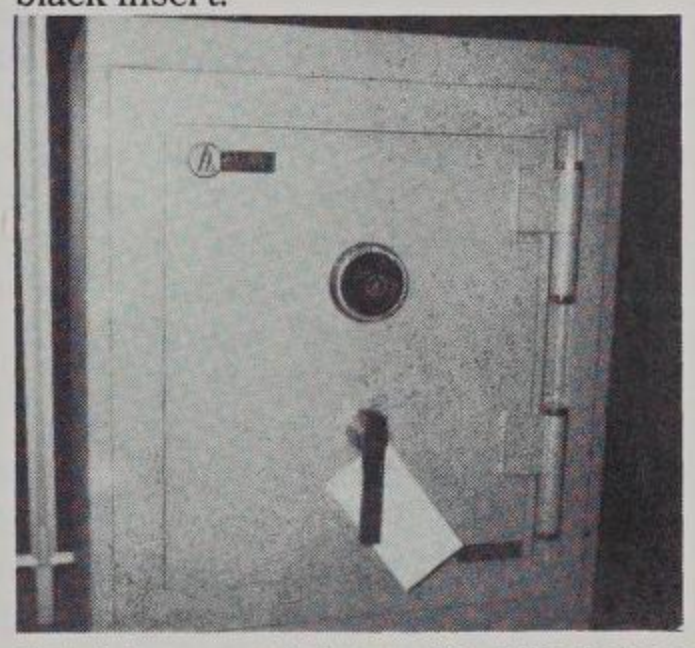


16. The inside of door; S&G RH mounted.

Photograph 15 is of a similar TL-15. The dial is visibly to the right of door center, and the handle is mounted beneath it.

Photograph 16 shows us the inside of the door with the back panel and back cover removed. As you can see, the S&G R6730 is mounted RH. Once again there are two relockers (*see arrows*).

Photograph 17 is of a larger container. One thing you will notice about many Allied square doors is that they use an old Schwab cosmetic trick: a satin chrome dial ring and a black dial. I personally like the appearance of a chrome ring and a black dial, especially in conjunction with a chrome S&G handle that has a black insert.



17. A large container with Allied door.

Well, that about wraps up this brief tour of (pre-Gary) Allied doors. Now that Allied owns Gary, these doors are no longer being produced, but there are half a zillion of them out there. If you run into one and have a problem, you can give John Dixon a call on the Allied/Gary technical assistance line at 800/678-4279. If John is tied up, then try Stan Fuher at the Friendly Fishing Hole outside of Spokane. He'll be glad to help...just as soon as he reels in the big one! §

Stan Fuher is one of the nicest guys you will ever meet. I dedicated one of my books to Stan, and I'll probably dedicate another one to him before I open my last safe. You are a good man, Stan. We need more like you.

by Dave Mc Omie

LaGard's Electronic Lock

"In my opinion this lock may become the world's most popular combination lock due to several factors."

Guys, I am excited. For six years I have dreamt of The National Safeman's Organization, and now it is a reality. As Director of the NSO, I have one simple goal: To provide the very best, most ***usable*** information on safes available anywhere in the universe. I feel fortunate to have a job that I love; and to those of you who join, I promise to always give it 110%.

There have been quite a few inquiries about our newsletter, *The National Safeman*, so I would like to briefly tell you a little about it. Each and every issue has articles in the following five departments:

BEGINNER'S CORNER: As the heading hints, this department is for the novice, and will cover basic safe servicing and opening procedures.

BREAD & BUTTER: This is a nuts and bolts department covering the common safes and safelocks that constitute the "bread and butter" of our business.

TOOLS AND TOPICS: This department will generally be devoted to reviewing safe tools, but will occasionally include debates on hot topics in the industry.

HIGH SECURITY: Opening and servicing information on the highest security safes in the world, such as Chubb, Fichet, ISM, KASO, SLS, Tann, and others. This is for the expert.

ASK DAVE: A Q&A department, where you can ask me anything you want. I don't have all the answers, but I will do my level best to do justice to every single question that comes in.

These five departments are the heart of *The National Safeman*. You can count on articles in each department in every issue. To give you a taste of *The National Safeman*, the following is an article taken from the BREAD & BUTTER department of an upcoming issue. I think you will like it.

A Critical Examination of the La Gard swingbolt Lock. I keep hearing that we are in the electronic age, that consumers are becoming more and more sophisticated, and thus more desirous of products that mirror that sophistication. Perhaps. But if we are so smart and sophisticated, then why do most of us have VCR's that blink 12:00...12:00...12:00...all day long?

Product sophistication is only half the formula. The other half is product simplification. The product has to be reasonably simple to use, otherwise most of us simpletons simply can't take advantage of the sophistication.

This month we will look at the sophisticated but simple-to-use Safegard Swingbolt Group 2 lock from La Gard. The Group 2 Swingbolt is the most popular lock currently on the market. Our discussion will focus on two perspectives: From the customer's perspective we will look at user friendliness; from the technician's perspective we will look at how to open this beast when it fails..

In my opinion this lock will probably end up being La Gard's greatest success story. My guess is that, barring any serious competition (at present there is none), the SafeGard Digital Swingbolt lock will be the most popular safelock in the world by the end of the century. Why? Three simple reasons:

(1) User friendliness. It takes less than five seconds to open the lock, and not much more than that to change the combination. Customers love the simplicity.

(2) Ease of installation. The "footprint" of the lock is standard, and the input panel mounts via the dial ring screw holes. The wiring is contained in a cable, and the connectors are the same familiar kind we are used to plugging and unplugging from our telephones. Technicians love the simplicity.

(3) Price. A 3600 (a Swingbolt with Round Push-Button Entry Pad) is currently around $135.00 our cost from Lockmasters, and retails for around $270.00. This is reasonable and competitive. The only thing that disturbs me is that Lockmasters has a monopoly on distribution, which means that they do not compete with anyone for our business. This makes me a little nervous, but so far the price (of the lock, not the training) has been quite reasonable.

The only real question that remains in my mind about the actual product is durability, and only time will tell us how durable the SafeGard will ultimately be.

There are three entry pads available in the SafeGard line: the Square Push-Button Entry with LCD (*see photograph 1*); the Dial & Push Input (*see photograph 2*); and the Round Push-Button Entry Pad (*see photograph 3*).

The three SafeGard entry pads: 1-Square Push-Button Entry with LCD. 2-Dial & Push Input. 3-Round Push-Button Entry Pad.

The Round Push-Button Entry Pad is the most popular, and as you can see, it is reminiscent of a touch-tone telephone.

"Dialing" the lock open is easy. It is set on a six-digit combination. As you enter each number, the lock will chirp. If you correctly enter all six numbers, the lock will chirp twice, indicating that you can open the safe.

Changing the combination is a customer's dream. It is a three-step process that is as fool-proof as possible:

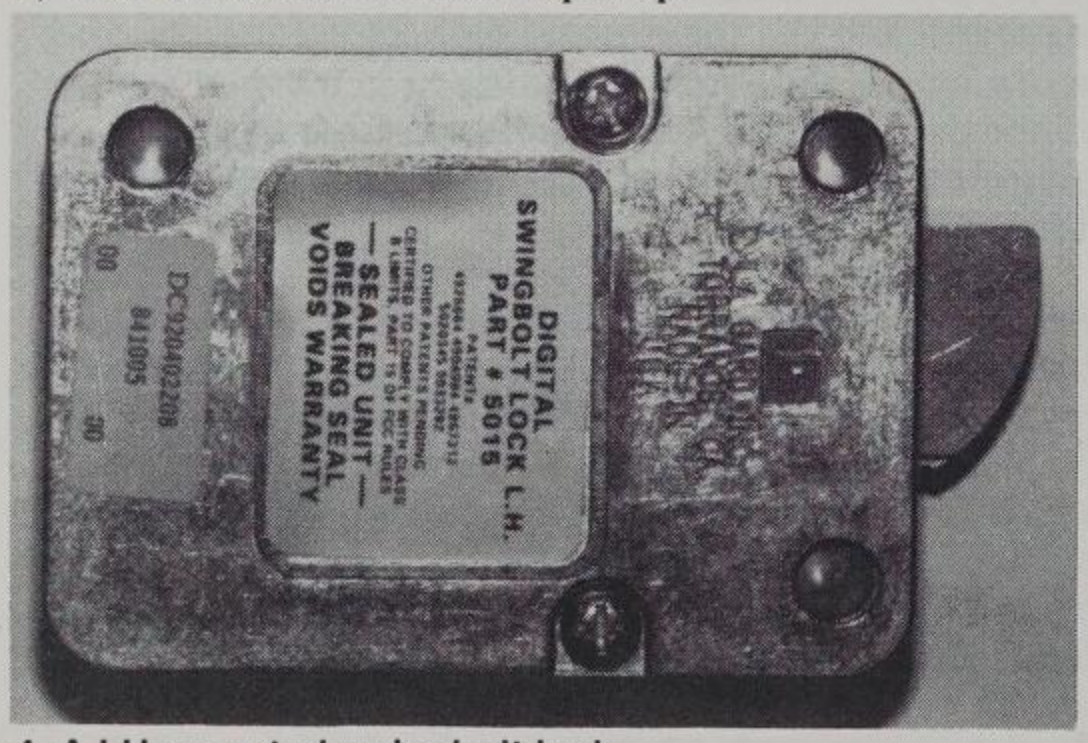
STEP ONE: Enter six zeros.

STEP TWO: Enter the old combination.

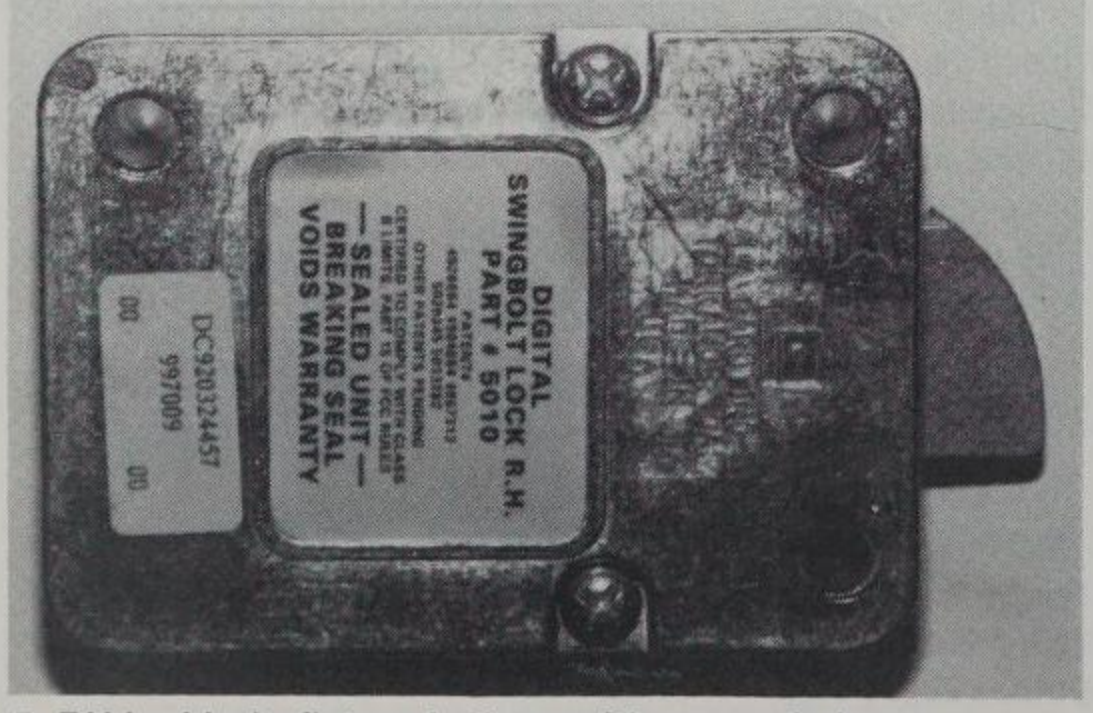
STEP THREE: Enter the new combination TWICE. You're done!

From the customer's perspective, this is a welcome change from the old hand-change/key-change nightmares. From our perspective it means fewer combination changes and fewer lockouts resulting from customer screw-ups. But that is the nature of progress. We can either move with the times, or perish in the nostalgic past.

Let's look now at the swingbolt lock. In photograph four, we have a LH lock mounted RH. In photograph five we have a RH lock mounted RH. What is the difference? Look at the lockbolts. They both extend to the right (viewed from the inside of the safe), therefore we say they are mounted RH. But observe the slope on the lockbolts. The lockbolt on the LH lock (*photograph 4*) is flat on top and slopes down; the lockbolt on the RH lock (*photograph 5*) is flat on the bottom and slopes up.

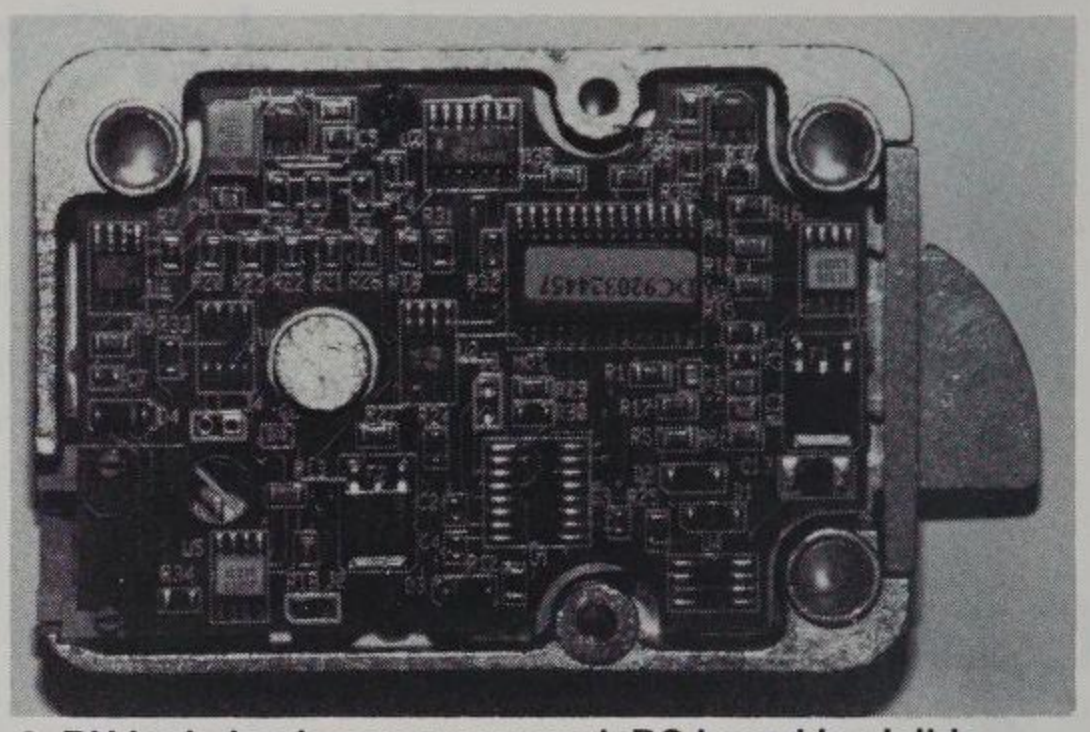


4. A LH mounted swingbolt lock.



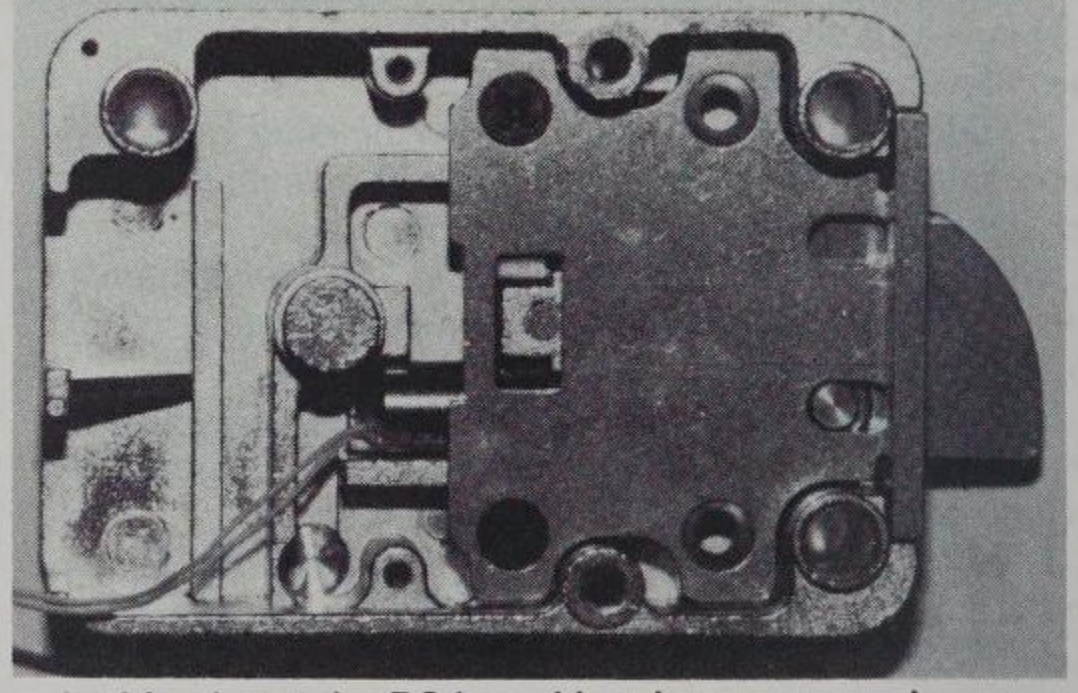
5. RH lockbolt, flat on bottom with upward slope.

In photograph six we have removed the back cover of the RH lock, exposing the PC board. Yech, this is a foreign land to us electronic ignoramuses. We now remove two small screws, gently lift off the PC board, and unplug the solenoid wires from the board.



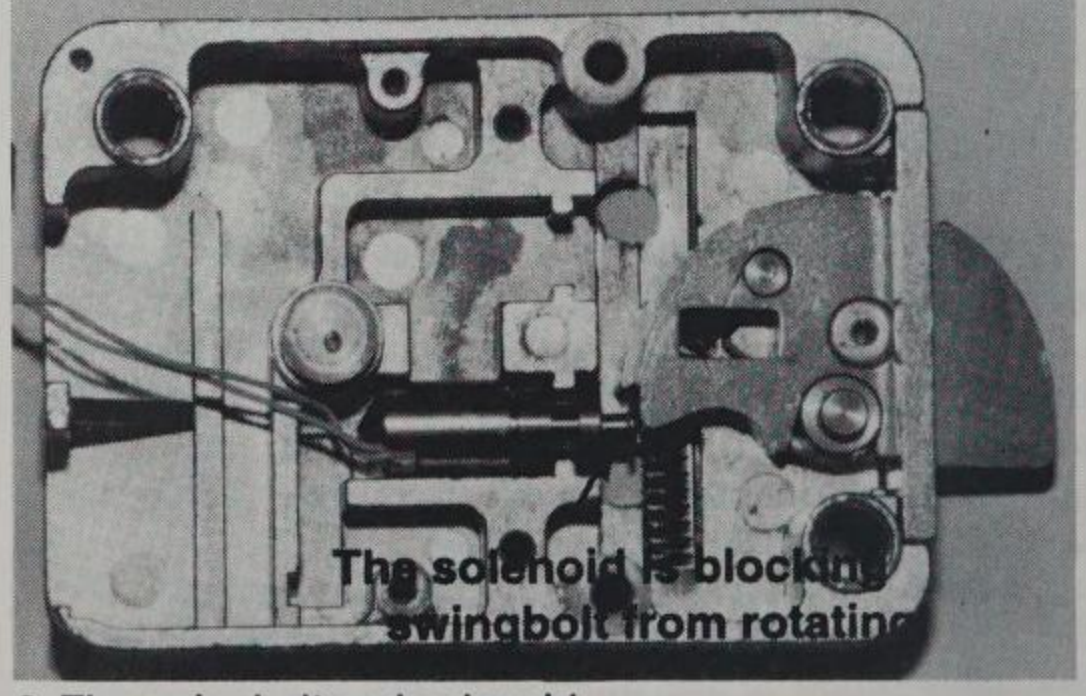
6. RH lock, back cover removed. PC board is visible.

In photograph seven the PC board has been removed. At this point we back out two screws and remove the swingbolt retaining plate.



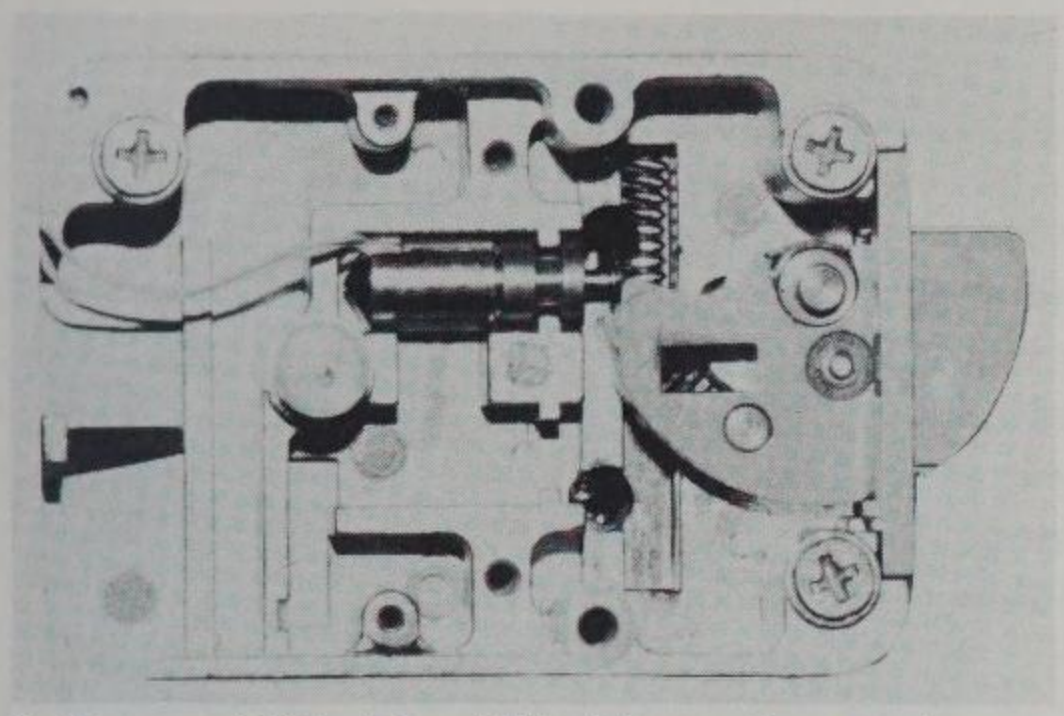
7. In this photo, the PC board has been removed.

Finally, in photograph eight we are down to the heart of the matter: the swingbolt and the solenoid. In this photograph the solenoid of this RH lock is blocking the swingbolt from rotating (*see arrow*).



8. The swingbolt and solenoid.

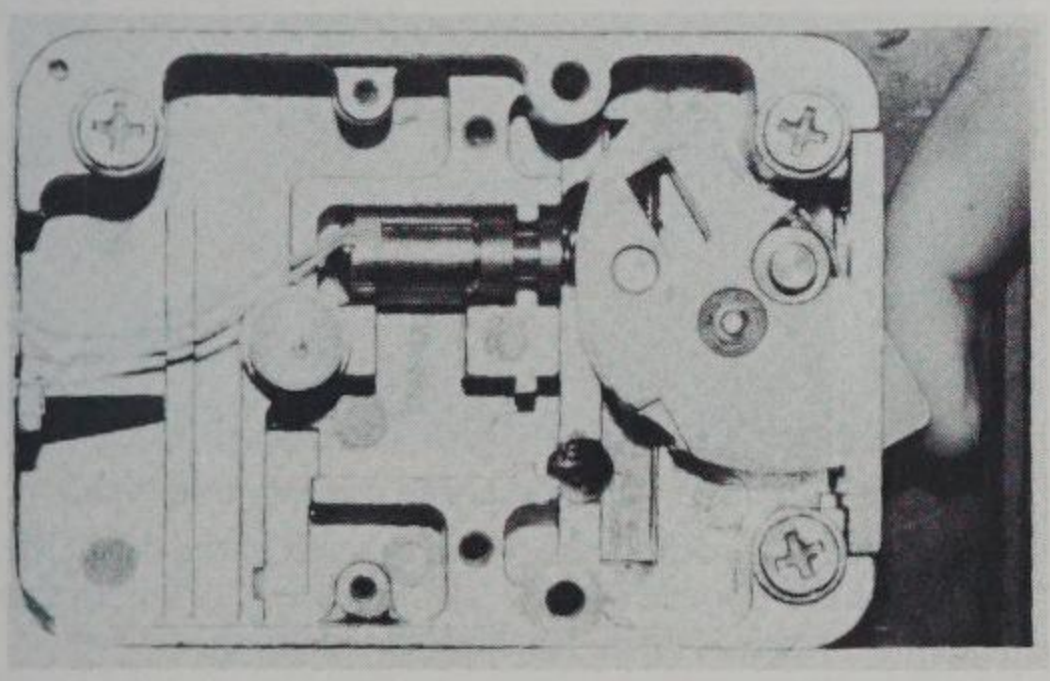
I have included photograph nine to show how easy it is to turn the RH lock into a LH lock. All you do is take out the little return spring pin, turn the lockbolt over and reinstall the return spring pin on the opposite side. Next, you take the solenoid out of the bottom slot, and put it in



9. Change a RH lock to a LH lock by moving a spring.

the top slot. That's it, we have turned a RH lock into a LH lock!

In photograph 10, I have simulated opening the lock. When the proper combination is entered, the solenoid retracts for about three seconds. During this three second "window" you may rotate the bolt-control handle to the unlocked position. With the solenoid no longer blocking it, the lockbolt can pivot into the unlocked position as the boltwork is opened. I have simulated the opening by pushing on the lockbolt (during the opening window) with a finger.



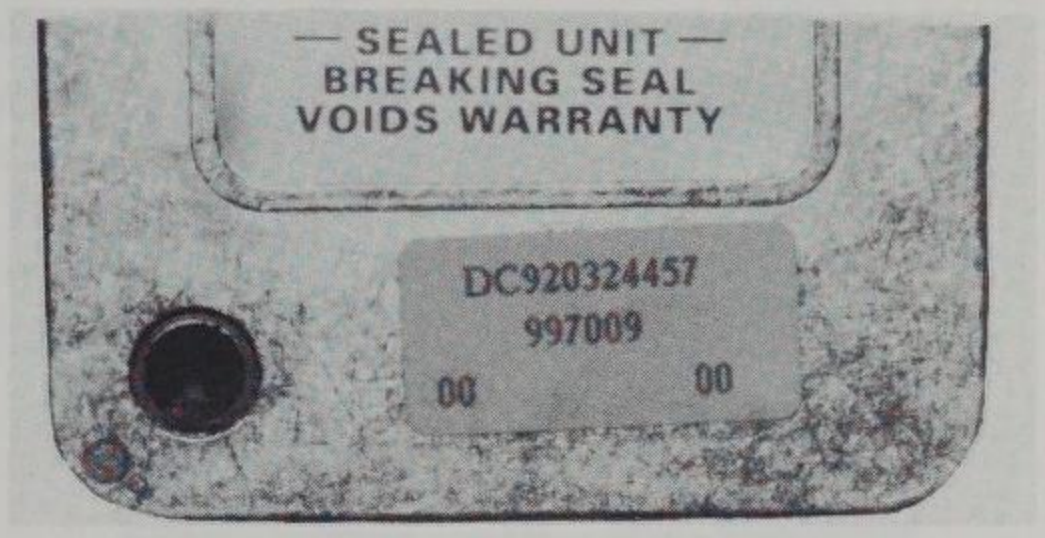
10. A simulated lock opening.

Dealing with a lockout. The technician facing a lockout should begin by checking the batteries in the entry pad. If they are low, replace them. A handy tip: replace the two batteries one at a time. This will allow you to avoid waiting 4-6 minutes for the lock to "power up." If replacing the batteries does not work, and if basic troubleshooting techniques (such as rapping on the door to relieve possible end or side pressure, etc) also do not work, then you may need to get serious. I see four possible opening strategies:

(1) Drill to defeat the boltwork of the safe, rather than the lock. (Punching back the handle cam far enough to bypass the lockbolt on a fire safe is one example of this).

(2) Drill for the solenoid. On a RH mounted lock mounted RH, the drill point for the solenoid is 1-1/8" RC, 3/8" down. When you get to the lock case, gently drill through it. Look in and you will see the spring-loaded tip of the solenoid. You can pry it back with anything-the spring is very weak. Holding it back, you can now rotate the handle and open the safe. If you look closely at photos 8, 9, and 10, you will see that this lock was drilled in both the LH and RH positions.

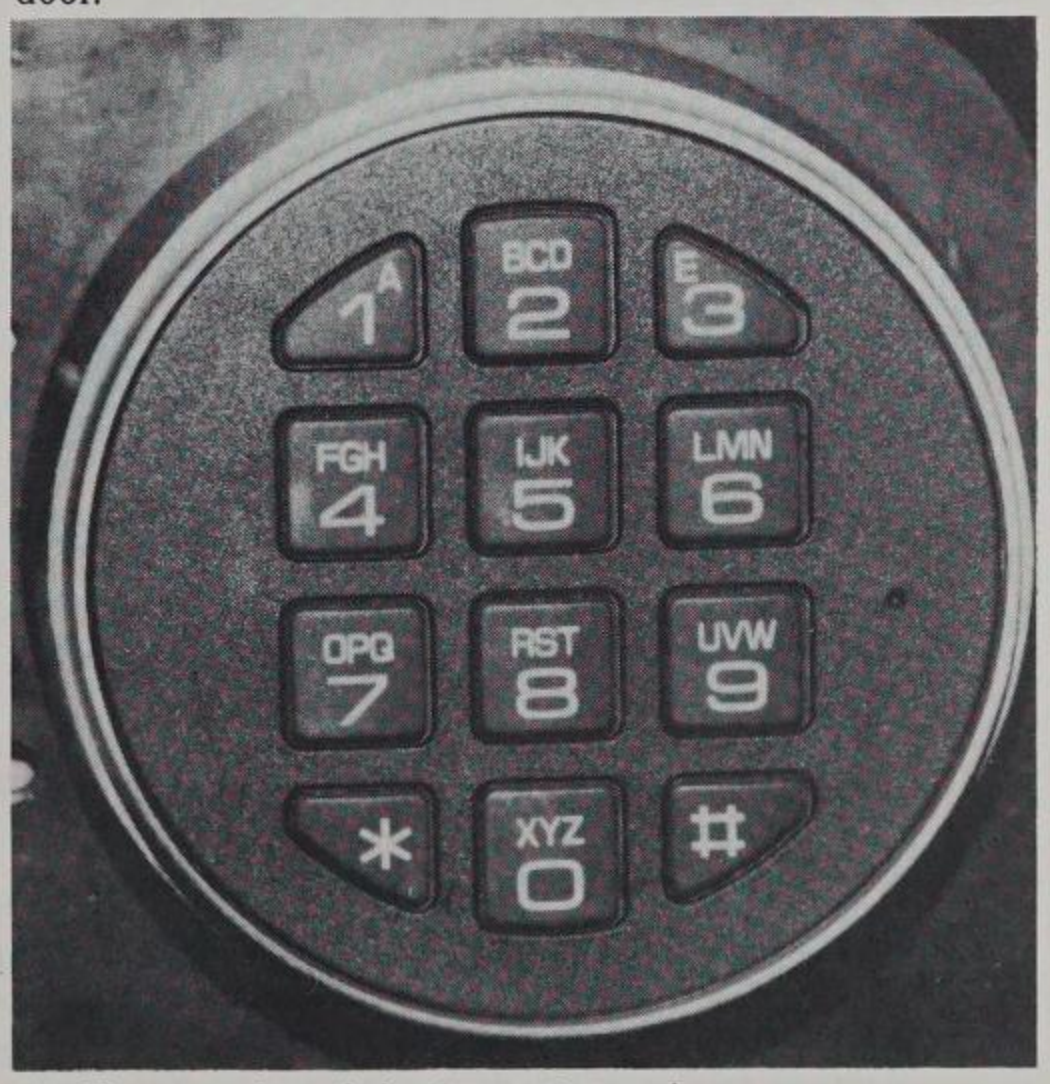
(3) Side-drill the safe to read the reset code on the back of the lock case (*see photograph 11*). The early versions of



11. The reset code found on the back of the lock case.

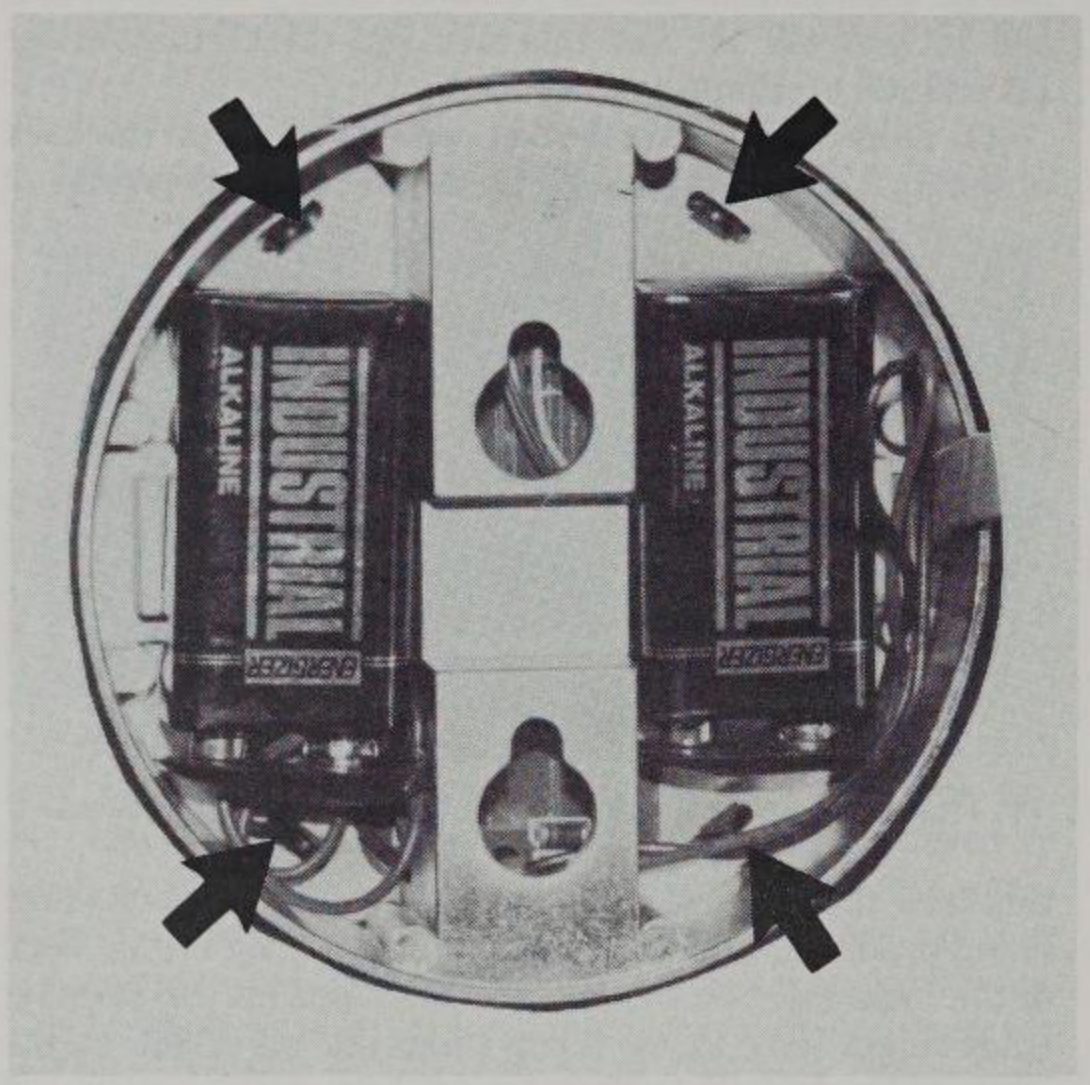
this lock did not have a reset number, but all locks now being produced have a reset number on a tag on the back of the lockcase. You can ask the customer for this number (they might have it), or if you think the tag is still on the back of the lock (I think most of them will be), you can side-drill the safe to read the number with a borescope. After you get the reset number, proceed as follows: First, enter the reset number. For the lock shown in photograph nine, we would punch in 9-9-7-0-0-9. This will cause the lock to reset itself to 5-5-5-5-5-5. We can now enter 5-5-5-5-5-5 to open the lock. That's it, the lock is open!

(4) Spike the lock. Huh? That's right; the early versions of this lock were vulnerable to an attack via a 9-volt battery. Let's walk through an opening. Photograph 12 shows us the Round Push-Button Entry Pad. The whole unit is lifted straight up and then out, to remove it from the face of the door.



12. The round push-button entry pad.

Turning the unit over, we see the batteries that power it (*see photograph 13*). We also see the four plastic clips that



13. The back of the push-button pad; batteries exposed.

hold the plastic cover on the front of the entry pad (*see arrows*). We push out the clips and the plastic cover pops off the front of the entry pad.

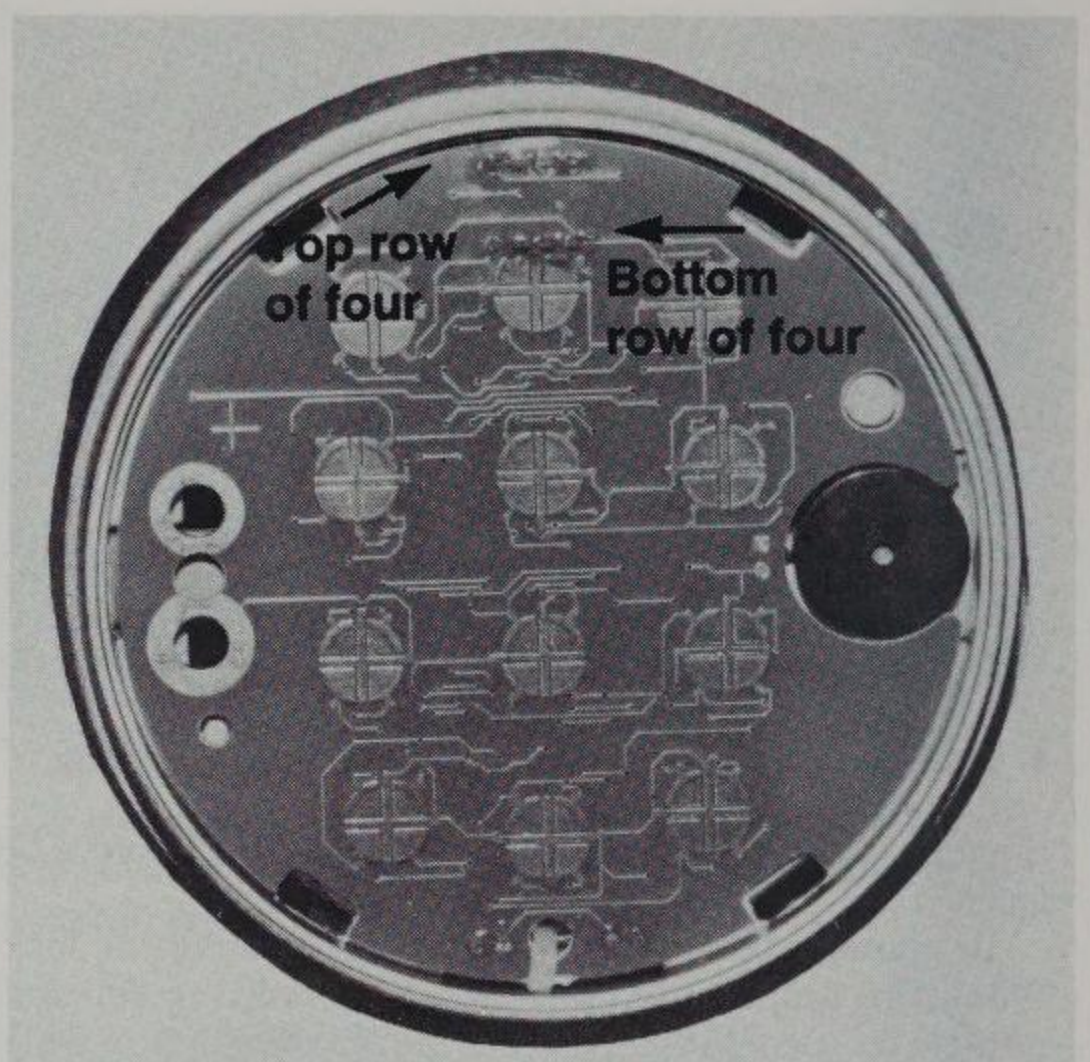
We now turn the unit back over and look at its face (*see photograph 14*). The plastic cover is gone, but there is now a sheet of rubber that we must peel off.

14. Face with plastic cover gone.

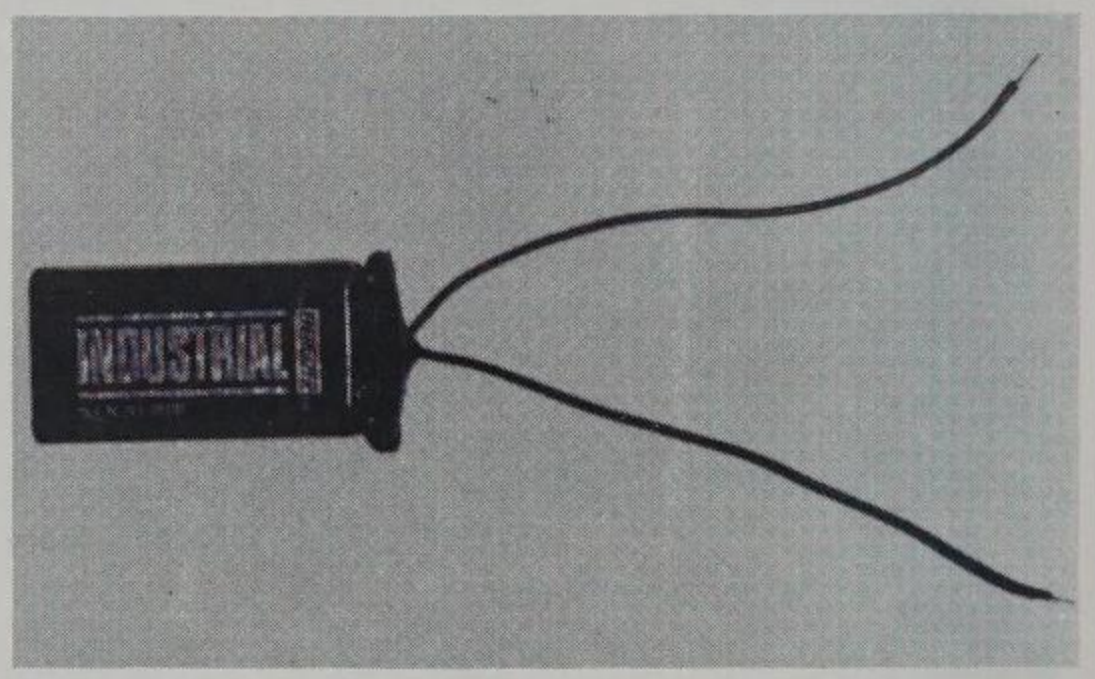
In photograph 15 we have peeled off the rubber to expose the board. Pay particular attention to what looks like eight little solder dots at the top of the board (*see arrows*). These little dots are the key to the opening.

Now we need our one and only tool: a 9-volt battery with two wires attached (*see photograph 16*).

The eight little dots are in two rows of four each. Take the wire from the negative side of the battery and hold it to the dot at the far right of the upper row. Take the wire from

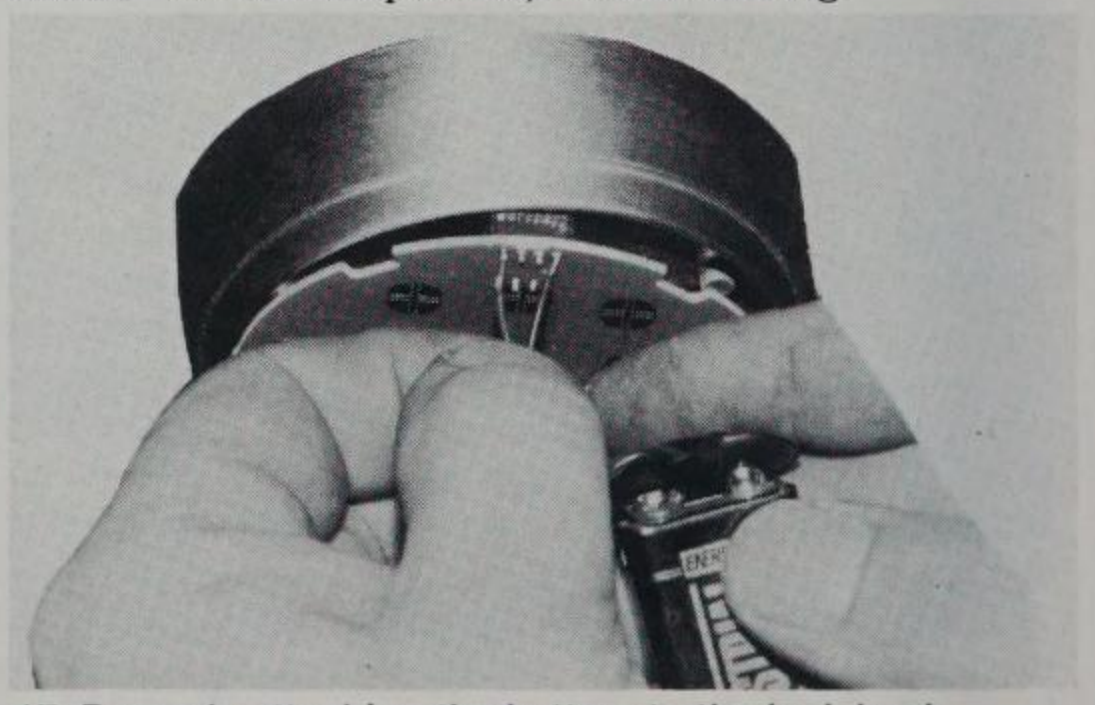


15. Rubber peeled off. Arrows indicate solder dots.



16. The 9-volt battery necessary to operate this lock.

the positive side of the battery and touch it to the dot at the far left of the upper row (*see photograph 17*). Rotate the handle—the safe is open. No, I am not kidding.



17. Properly attaching the battery to the lock back.

I have not tried this on the Square Push-Button Entry with LCD, or on the dial and push Input, but I suspect the same technique will work, perhaps in a revised form. La Gard claims that this technique will not work on the new generation of resettable locks. They might be right, but we will keep experimenting! §

As I said, the early versions were susceptible to the 9-volt spiking attack, but then LaGard began making the lock more and more spike-resistant. Don Spenard and I were goofing around one afternoon at my apartment, playing with a couple of the more difficult locks. We started alternating our attack from 24 volts DC to 24 volts AC, and we discovered that after alternating DC to AC a few times, the solenoid piston would start chattering like a machine gun when AC was applied for the second or third time. On current production models, the AC/DC trick has limited success.

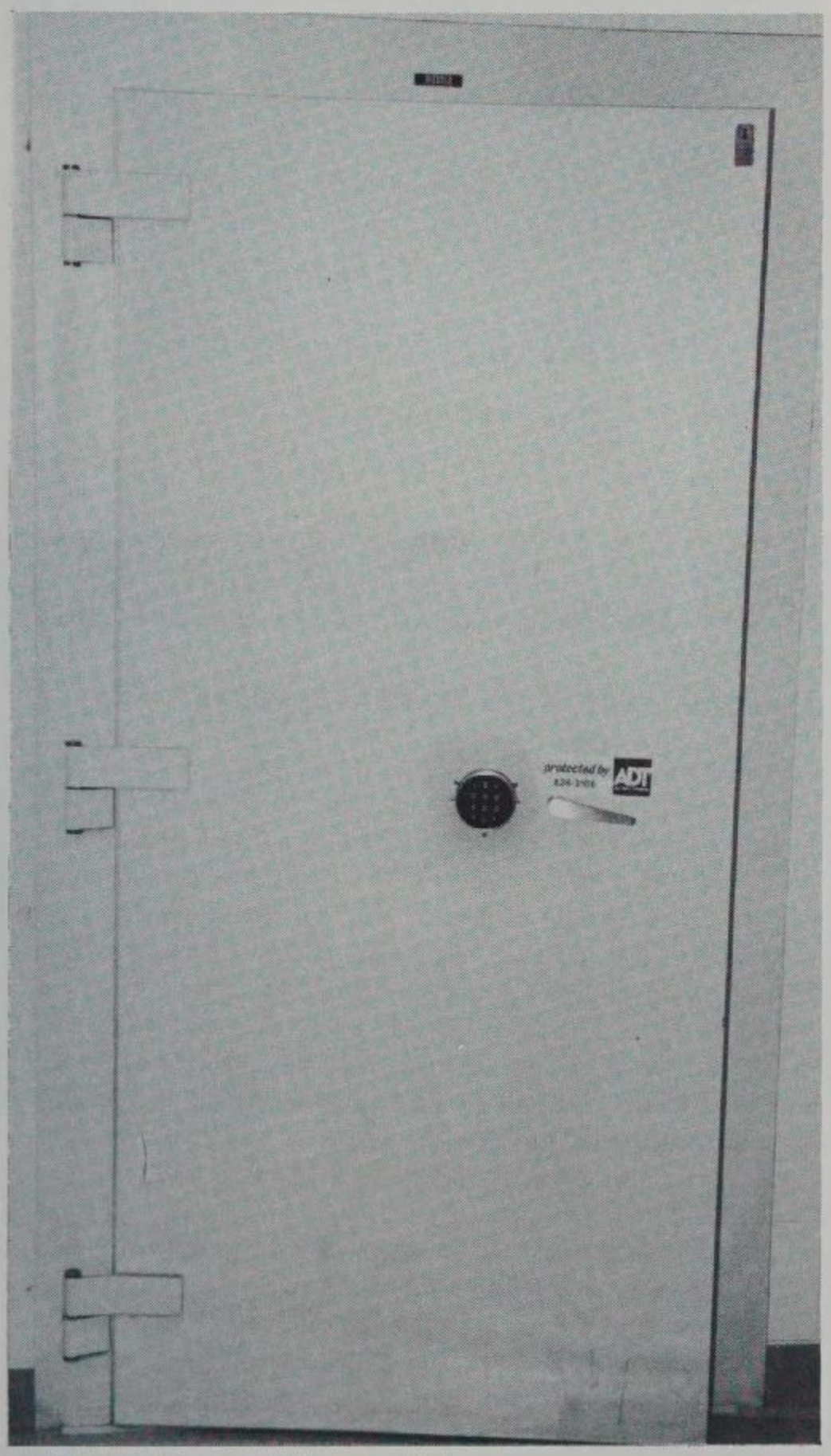
by Dave Mc Omie

Safe Potpourri

"Simply pull the T-handle toward you and rotate counter-clockwise until it stops. The vault is open."

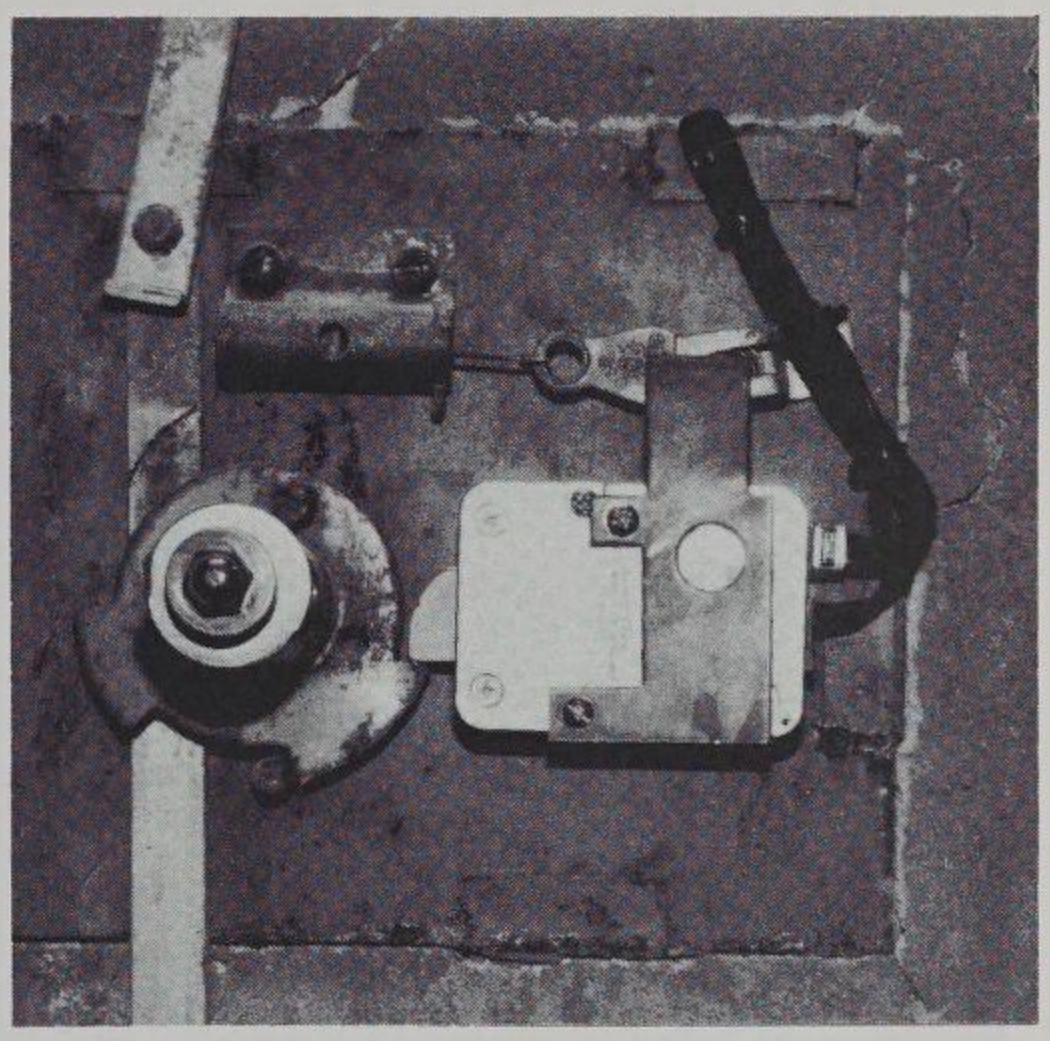
Good reports are coming in from technicians who are retrofitting LaGard Safegard Swingbolt locks onto existing safes and vaults. Let's look at a couple.

Don Spenard converted the Diebold fire-resistive vault door shown in photograph one. Notice the push-button entry pad where a Diebold spyproof (hypnotic!) dial and ring used to be.

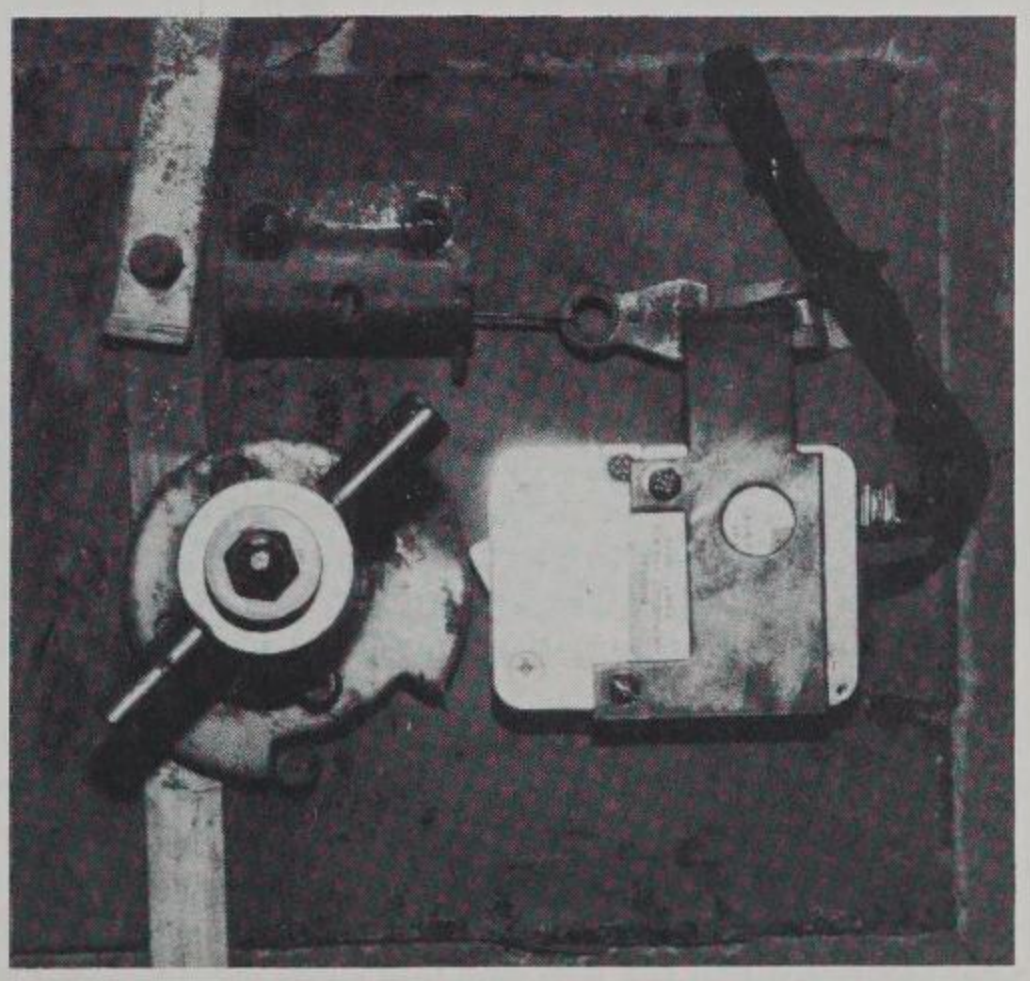


1. Diebold fire-resistive vault door

Photograph two shows the inside of the vault door around the lock. Don has left an extra foot or so of cable. If you get a knob-knocker who knocks off the entry pad and damages the wires in the cable, it really helps to have the extra length to work with. In this photo, the boltwork is



2. The inside of the vault door, by the lock.

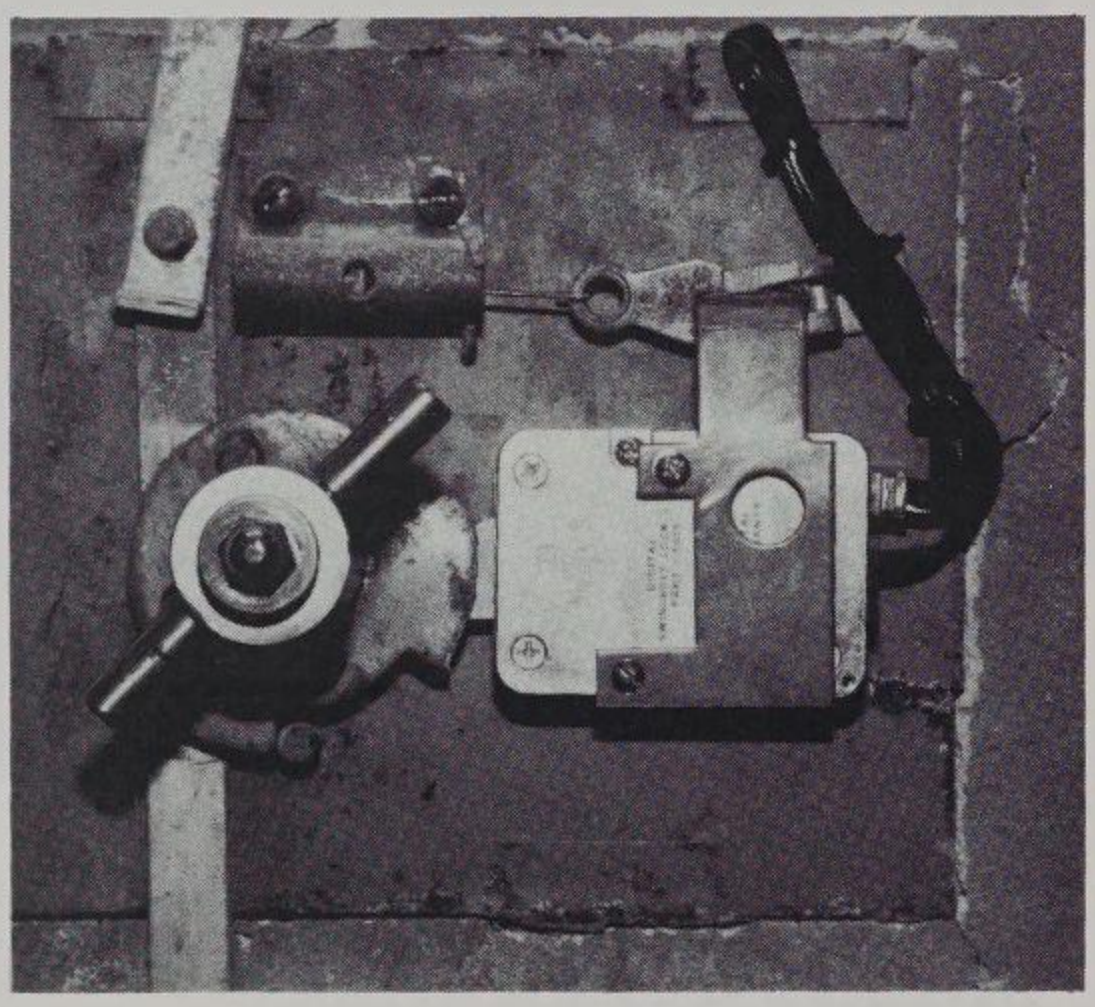


3. With the correct combination, the handle is rotated and the boltwork retracted.

extended and the lock is locked. Notice that the handle cam butts right up against the bottom of the lockbolt of the LH mounted lock.

In photograph three the correct combination has been entered, and the handle rotated to retract the boltwork. The lockbolt has pivoted so that most of it is now inside the lockcase. When the handle is rotated back to the locked position, the spring-loaded lockbolt will pivot back to the locked position and the solenoid will deadlock the lockbolt.

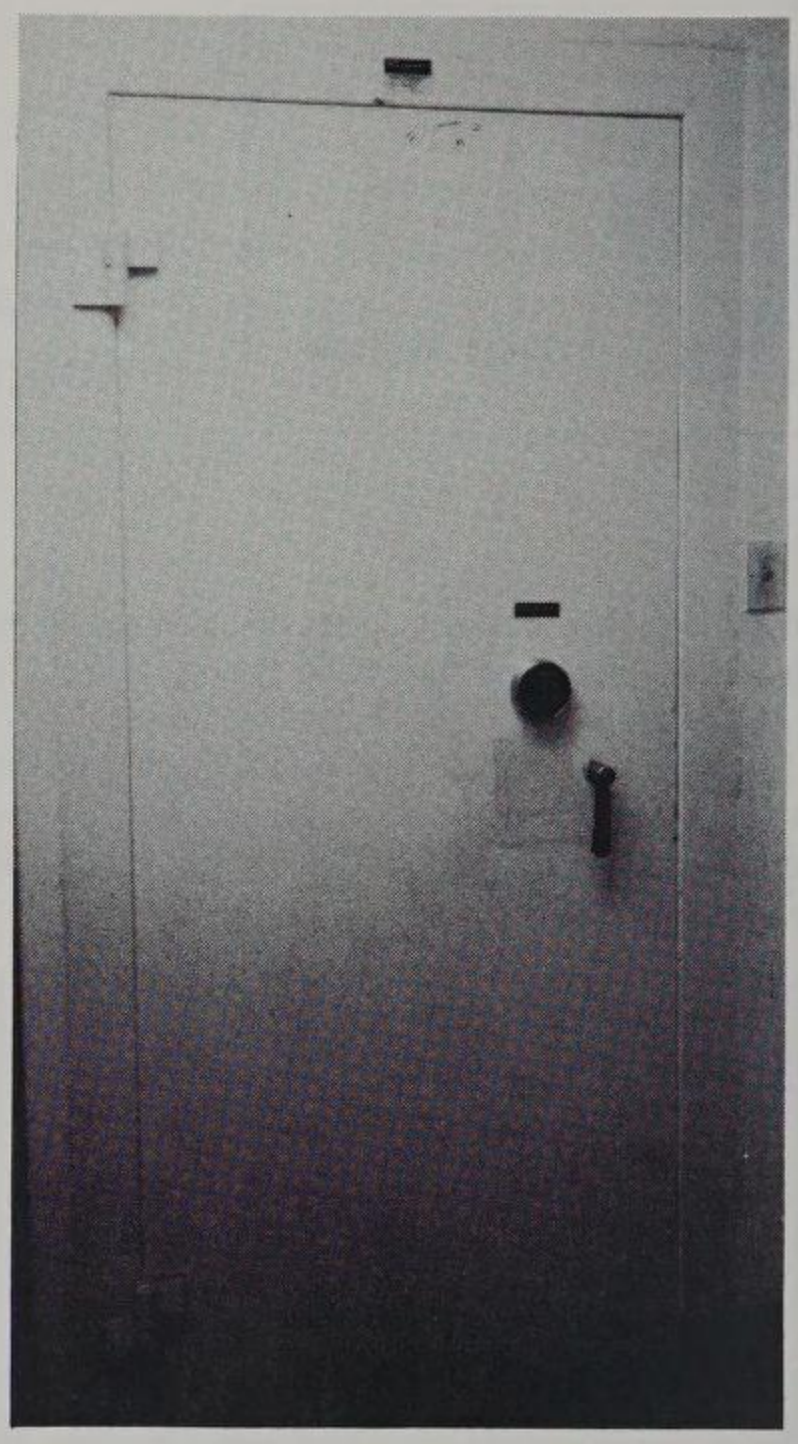
Photograph four is to show how the emergency release works in an old-style Diebold. Simply pull the T-handle toward you, and rotate counterclockwise until it stops (about 1/8 of a rotation). The vault is open. What happens when you pull the T-handle toward you is that the handle cam also comes toward you, just far enough to bypass the lockbolt. This is what allows you to rotate the T-handle to retract the boltwork.



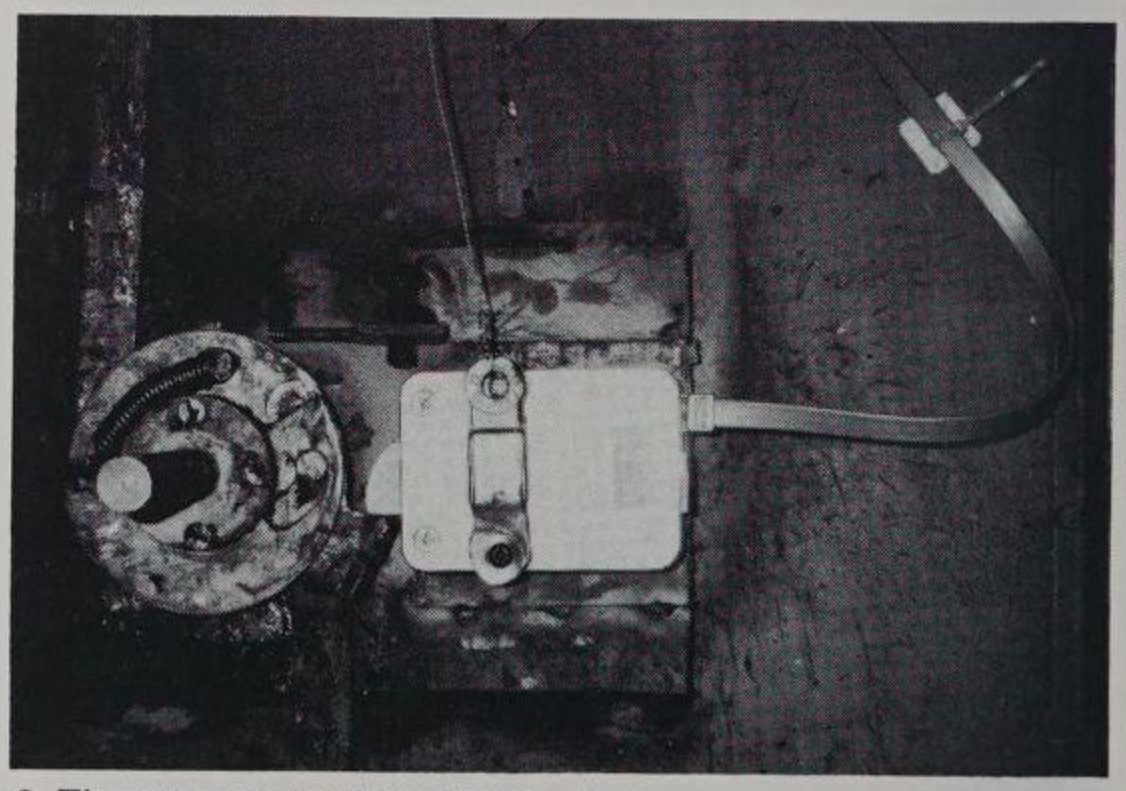
4. The emergency release functioning on the Diebold.

To even things out, we will now look at a retrofit on a Mosler fire-resistive vault door. (*See photograph 5.*) This one was performed by Dave Richardson, and if you look at the dial/handle arrangement, you will see that Dave is getting a little tricky—the new "dial" is about eight inches above where the old one was! This is one of the beautiful features of the LaGard electronic locks; the lock does not have to be mounted right behind and in line with the dial. Why? Because there is no rigid spindle that connects the dial to the lock. The connection between dial and lock is made via a flexible cable with eight wires in it. In other words, you can mount the "dial" (entry pad) almost *anywhere!*

Photograph six takes us inside for a look at the area around the lock. At the top center of the photo, you can see the cable coming through the hole Dave drilled in the vault. The cable winds around and is plugged into the Swingbolt in the middle of the photograph. This nicely demonstrates that the lock and entry pad can be mounted *completely independent* of each other. This trick, my friends, will soon be adopted by many safe manufacturers, and we had better be prepared for it. The price of poker is about to go up!



5. A retrofit on a Mosler vault door.



6. The area around the Mosler lock.

If any of you have had experiences retrofitting electronic safelocks onto safes and vaults, please let me know about them.

Did you have to enlarge the spindle hole? Did you run into any problems on certain models of safes? You can write me in care of this magazine.

****

How do you move an elephant-heavy safe from down the street to your house? With a brain and a crane. Yep,

grey mass and muscle make a good combination, as James Peck found out when he bought himself a Corliss cannonball.

In photograph seven we have the crane in action, lowering the Corliss onto the nuclear sidewalk outside

7. The crane used to move a Corliss cannonball safe.

Jim's home in Grand Forks, North Dakota.

Photograph eight shows the cargo being gently lowered. I wonder what the advertised strength of those

8. Lowering the safe with a crane.

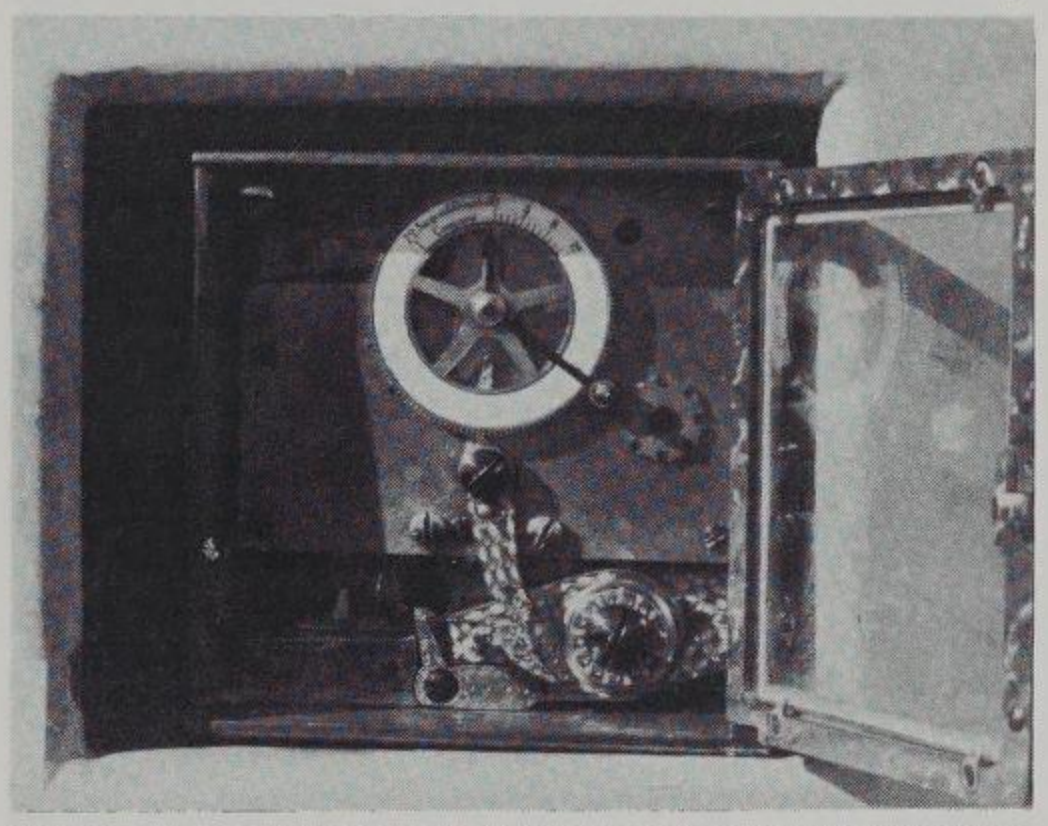
9. The Corliss placed on ground with ball rotated.

straps is?

In photograph nine the Corliss is in place, with ball rotated to partially expose the timelock (the timelock would be totally exposed except for the duct tape over it).

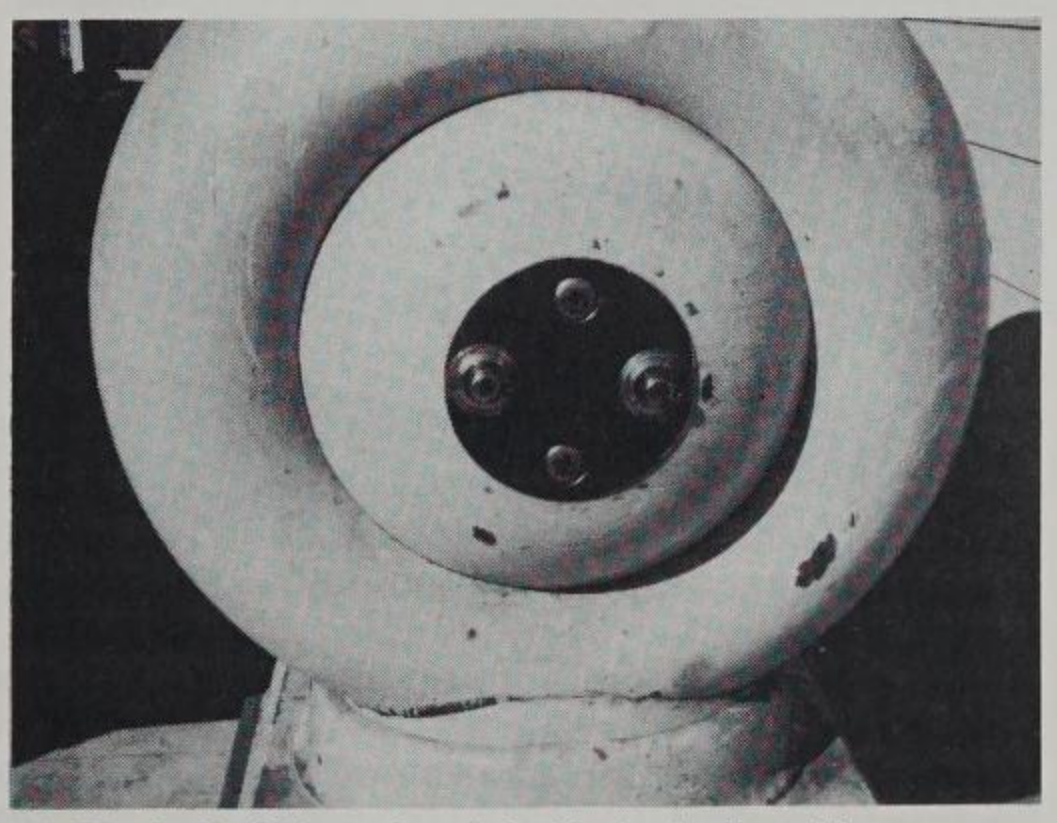
I just said something that may sound odd to some of you. You may wonder what I meant when I said the ball was "rotated." Well, the Corliss is a strange bird. After you open one of the combination locks, you can then rotate the entire ball to gain access inside. The ball can be a 1/2 ball, 3/4 ball, or a full ball.

Photograph 10 is a close-up of an old Sargent & Greenleaf timelock Dan Graffeo would love. What a beauty.



10. The Sargent & Greenleaf timelock found in the Corliss.

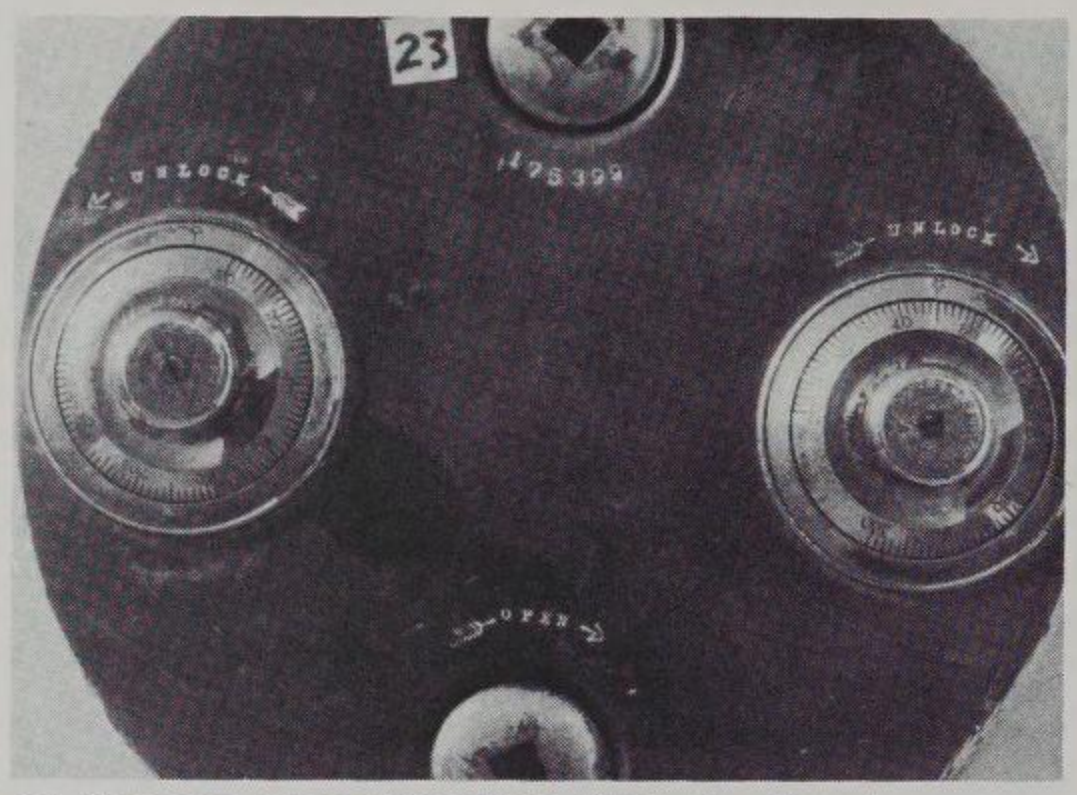
In photograph 11 we see the ball rotated to its locked position. Visible are the two Sargent & Greenleaf dials, and the two square slots that the cranks go into.



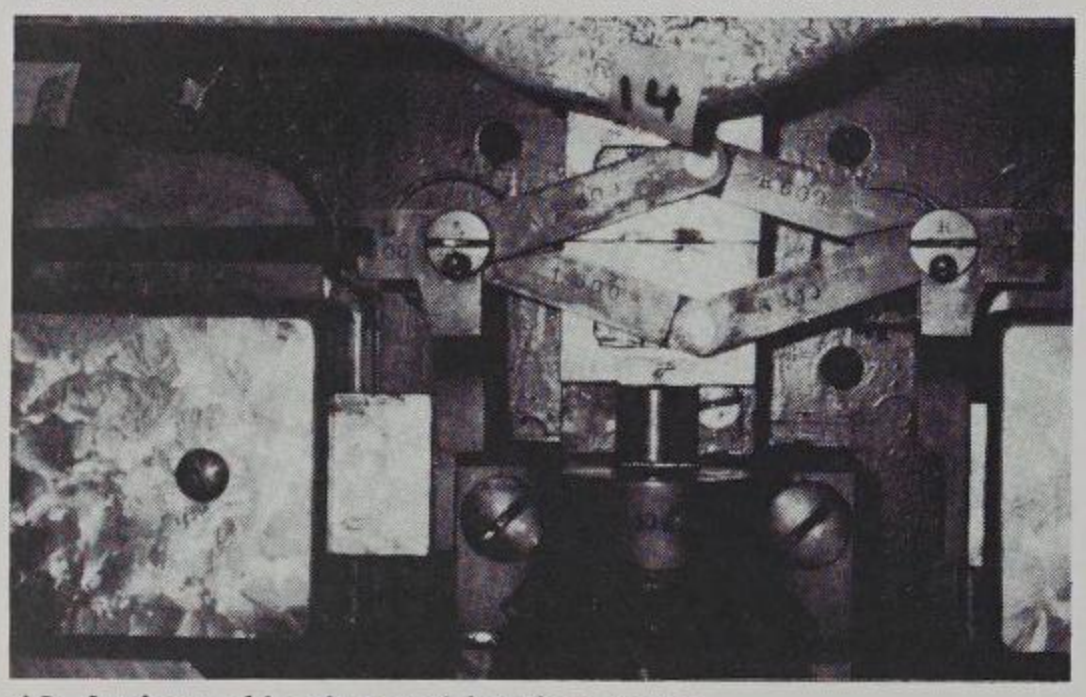
11. The ball of the safe rotated to locked position.

Photograph 12 gives us a close-up of the area around the dials. As you can see, Corliss was gracious enough to provide rotation directions for opening and unlocking.

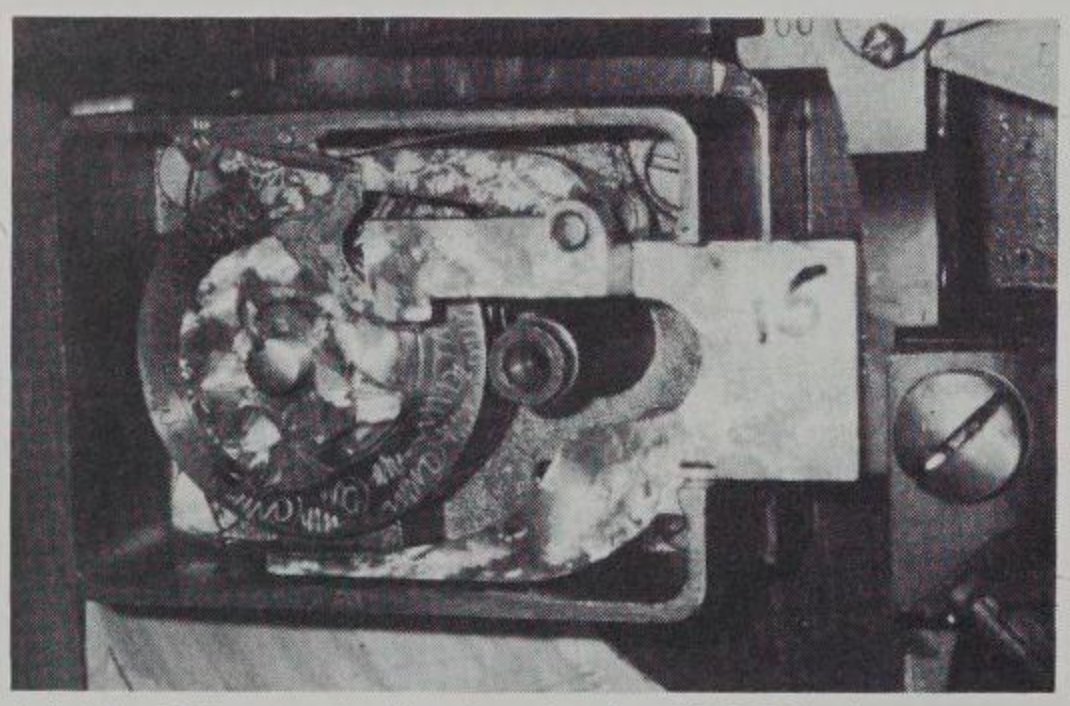
Photograph 13 shows part of the two combination locks, and the rods, gears and guck that are in between them. The lock on the left is a true RH lock mounted RH. The lock on the right is a true LH lock mounted LH. Both locks are indirect drive, which means the spindles do not run straight from the dials to the locks. Corliss appears to have



12. The area around the dials. Note directional arrows.



13. A view of both combination locks.

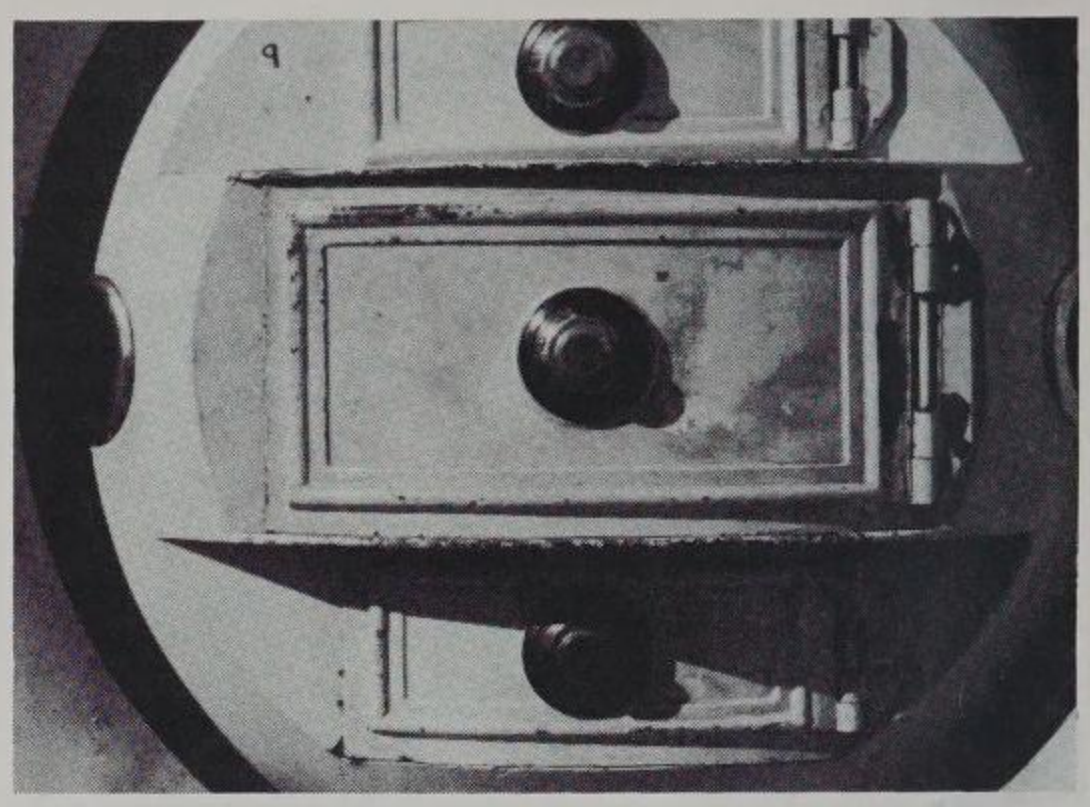


14. The RH mounted lock, a 4-wheel S&G lock.

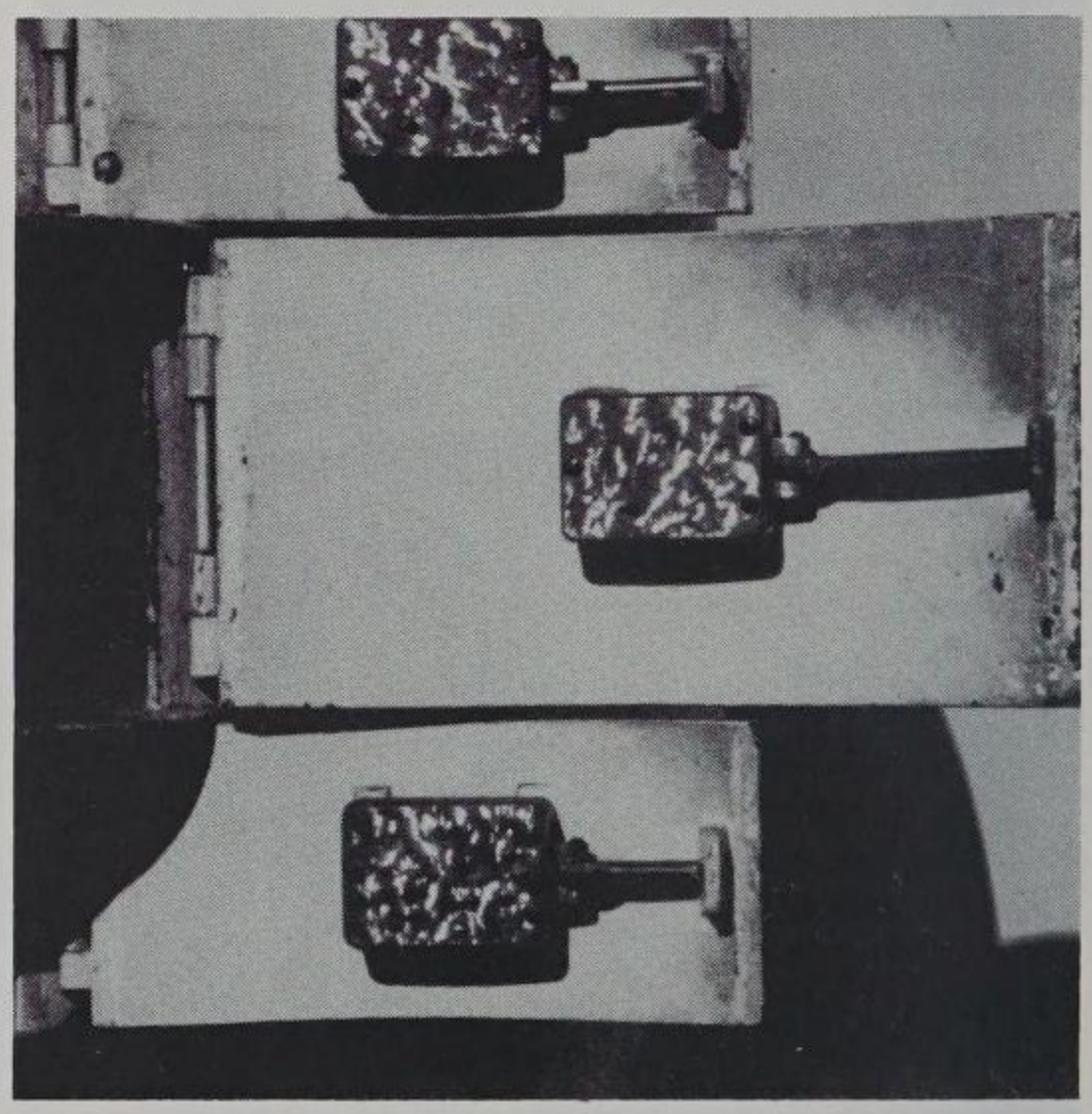
varied the offset from safe to safe, however, which makes deducing a precise drill point very difficult. My good friend, Skip Eckert, drilled one on which the offset from dial center to wheel center is 2-1/2" down, 11/16" towards the outside of the ball. But Phil Shearer and Joe Dube have reported finding Corliss's with different offsets than this. I will let you know if and when this drill point confusion is resolved.

Photograph 14 is a close-up of the RH mounted lock. (This is the lock that is on the left as you look from the inside, which is controlled by the dial on the right side of the safe as viewed from the outside). This is a 4-wheel Sargent & Greenleaf lock; the diameter of the wheels is 2-7/16".

In photograph 15 the lock has been dialed open, and the



15. The lock dialed open and the ball rotated 180 degrees.



16. The inside of the three doors.

ball has been rotated 180°, exposing the three inner doors.

Photograph 16 shows the inside of all three doors. As you can see, they all use the same combination lock mounted RH with a door locking bolt connected directly to the lockbolt of the combination lock.

Well that about wraps up this months meanderings. We have jumped from installing the most modern, state-of-the-art electronic locks, back to the days of the he-man safe, the Corliss. Maybe next month we will look at something in between. See ya then. §

Retrofitting electronic locks is big business for nearly every shop that has actively solicited the work. Go for it. It is fun and profitable.

by Dave McOmie

Bungling Safe Burglars

"Opening a burglarized safe can be challenging, depending on the extent of the damage done by the bunglars."

In September I shared with you a trick for using a 9-volt battery to open the old-style LaGard Digital Swingbolt electronic lock. The article was excerpted from a more comprehensive article I have written for a future edition of The National Safeman. *In the process of excerpting, some important points were left out; points that should have been in the article. They are as follows:*

(1) You need only to touch the positive wire (from your 9-volt battery) to the upper leftmost pin for about a half second to activate and retract the solenoid.

(2) In using this technique, you run a very high risk of shorting out all the components in the electrical path from the keypad to the solenoid, thus ruining the lock. (the longer you hold the positive wire to the pin, the higher the probability of a ruined lock).

(3) Personally, I would not re-use a lock that had spiked,. even if it appeared to be working properly after being spiked.

(4) As a result, it is my recommendation that this technique only be used as a last resort in the case of a malfunctioning lock. If you are confronted with a mere lost combination, use one of the other opening techniques that I discuss in the article.

Unaltered, this technique will not work on the new-style resettable locks (these locks have a reset tag on the back cover). However, a new technique is being tested that promises to beat ALL of the LaGard Group 2 electronic locks, old and new style. As the research progresses, I will keep you posted.

Has it ever occurred to you that a great many professions exist because bad things happen and bad people exist in the real world?

Doctors have jobs because people get sick. Morticians have jobs because people die. Policeman have jobs because bad people do bad things to other people. Locksmiths and safemen have jobs because because bad people try to take property from other people.

Lucky for us and our customers, most attempts by the bad guys to take property out of other people's safes are badly bungled failures that require our expertise to undo the damage and get the safe open.

Opening a burglarized safe can be challenging, depending on the extent of damage done by the bunglars. The most common and idiotic technique used by bungling bimbos is to bust off the dial and handle flush with the face of the safe door. Without realizing it, these bimbos have made the safe MORE difficult to open.

This month we will look at how to overcome some common burglary situations by opening, you guessed it, a burglarized safe!

In photograph one is a burglarized no-namer; at least I cannot identify it from the outside. The bungling bimbos had knocked the dial and handle off and split just before the cops arrived. About all we can tell for sure is that it is an old cast iron fire safe that got beat up but didn't open.

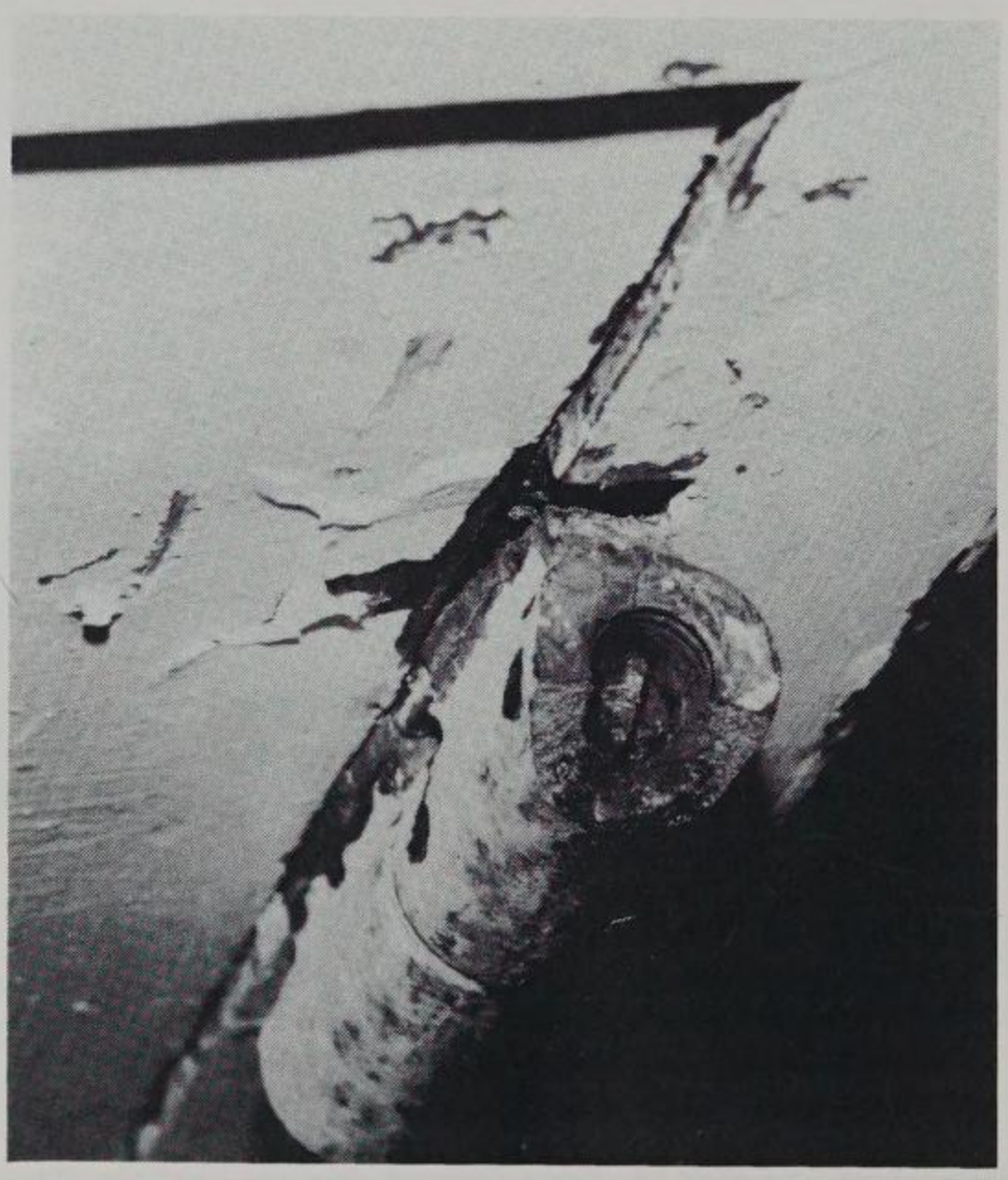
1. A badly burglarized safe.

Photograph two is of the nondescript handle that was so skillfully removed by the bimbos. Not much of a clue.

Photograph three is worth paying close attention to. We can see the damage to the area around the dial and handle—that is obvious. What is not so obvious is the damage they inflicted on the hinges. Always, ALWAYS check the hinges on a burglarized safe for damage. The last thing you need is to swing open a heavy safe door and realize, just as the door heads for your Nikes, that the hinge pins were cut or removed. In this photo what we see is that the bimbos beat the heck out of the top hinge, and broke it off. This means that we will have to be extra careful when we swing the door open.

Photograph four is a close-up of the area where the dial and handle USED TO BE. The dial spindle has been punched flush with the door, and the handle shaft broken off about 1/4" below the surface. The arrow is pointing to something very interesting: a tapered steel pin—someone

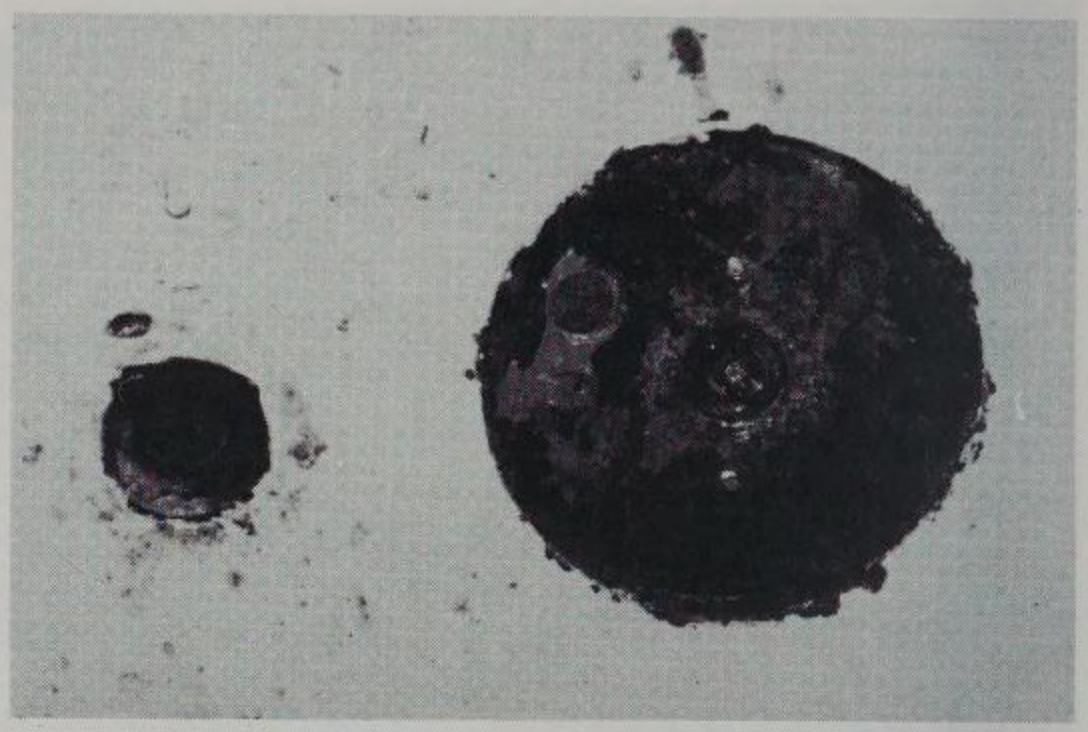
2. The handle which the burglars had "removed."



3. You should always check for damage to the hinge.

has previously drilled this safe and repaired it with a tapered pin.

In photograph five we can see a hole being drilled next to the pin. This is to allow the pin to be pried out. There are two techniques I use to remove tapered pins. If the pin is in a money safe, which means solid steel, I like to drill down the center of the pin to remove it. Usually you only have to penetrate about 1/2" of the pin to remove it. If the pin is in a fire safe, which means most of the pin is in insulation, then I like to drill alongside it, as it is being done in this photo. If you try to center drill a tapered pin in a fire safe, more often than not the pin will move inward

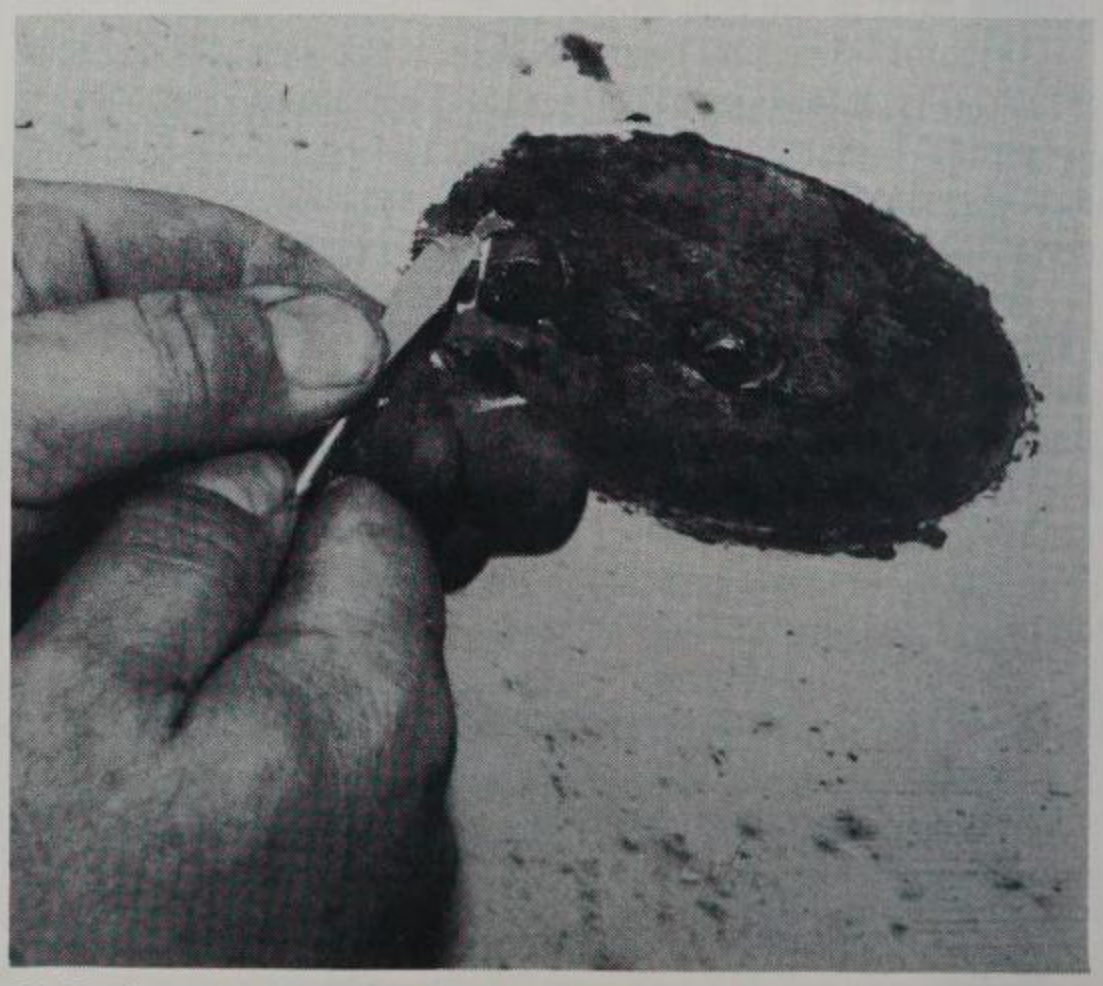


4. Area where the dial was.

5. Drilling a hole next to a tapered steel pin.

and become jammed even worse; since the door is not solid steel, the pin can move around a lot, and unfortunately (at least in my case) the pin seldom decides to move out of the way.

In photograph six, the pin is being pried out with a small screwdriver. Sometimes it takes something a little more persuasive, but this time a small screwdriver did the



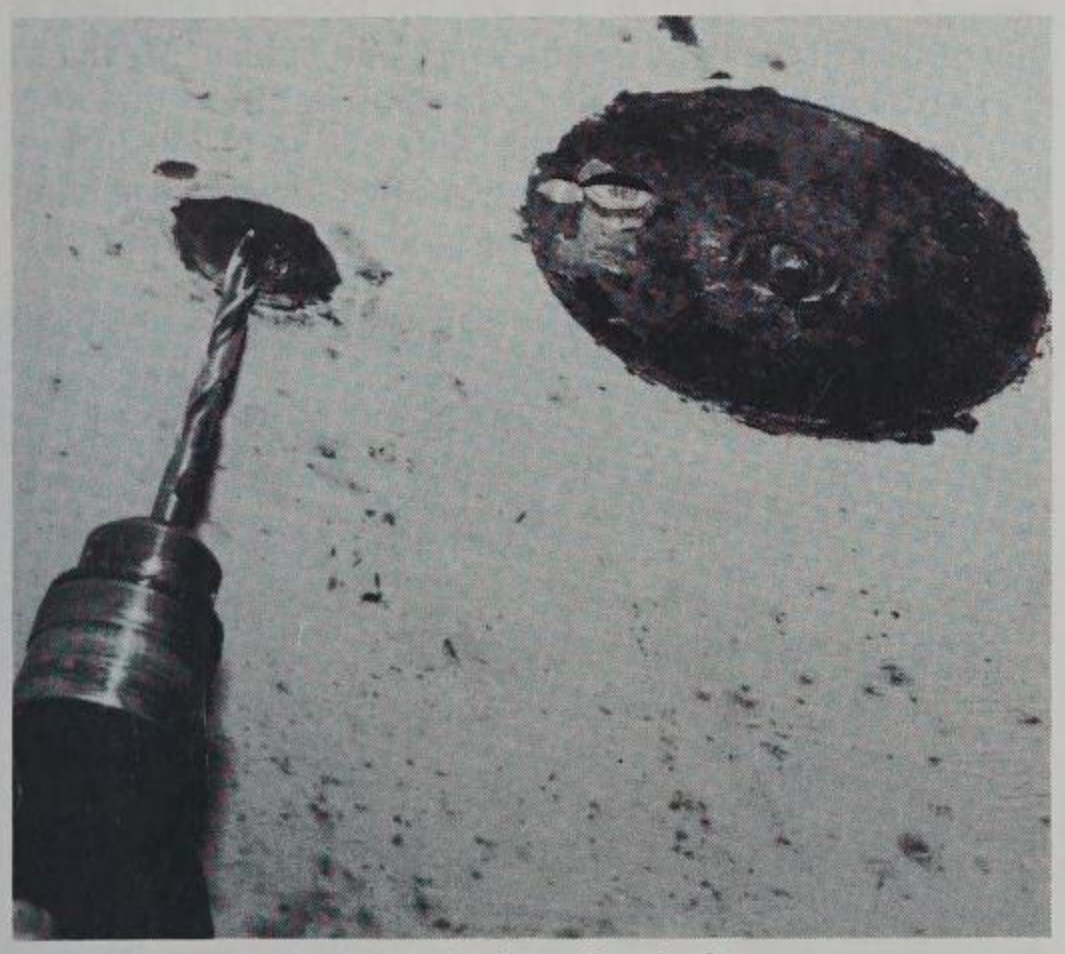
6. Prying out the pin with a screwdriver

job nicely. Notice that both holes, the repaired hole and the hole next to it that was used to pry out the pin, are under the dial ring area. (Not that it really matters—this safe is a goner.)

With the pin out of the way, a scope is inserted into the hole, in the hope of identifying the lock. Surprise of all surprises, this hundred year old monster has a relatively recent vintage Sargent & Greenleaf 6730 on the inside. It appears that whoever did the tapered pin repair also replaced the lock. It was also determined through the hole that the lock is mounted right hand (RH). But that is about all we can do, because the lock is too messed up to be opened through this hole.

With that information in mind, we now turn our attention to the handle shaft. It had been broken off about 1/4" below the surface of the safe. We need some way of retracting the boltwork, so we had better rig up a makeshift handle. Next we drill a 3/16" hole about an inch down the center of the handle shaft. (*See photograph 7*)

With a hole down the center of the shaft, we can now gently tap in an Easy-Out . (*See photograph 8.*) This will give us a makeshift handle shaft to rotate with a crescent wrench or vice grip when the time comes.



7. Drilling a hole down the handle shaft.

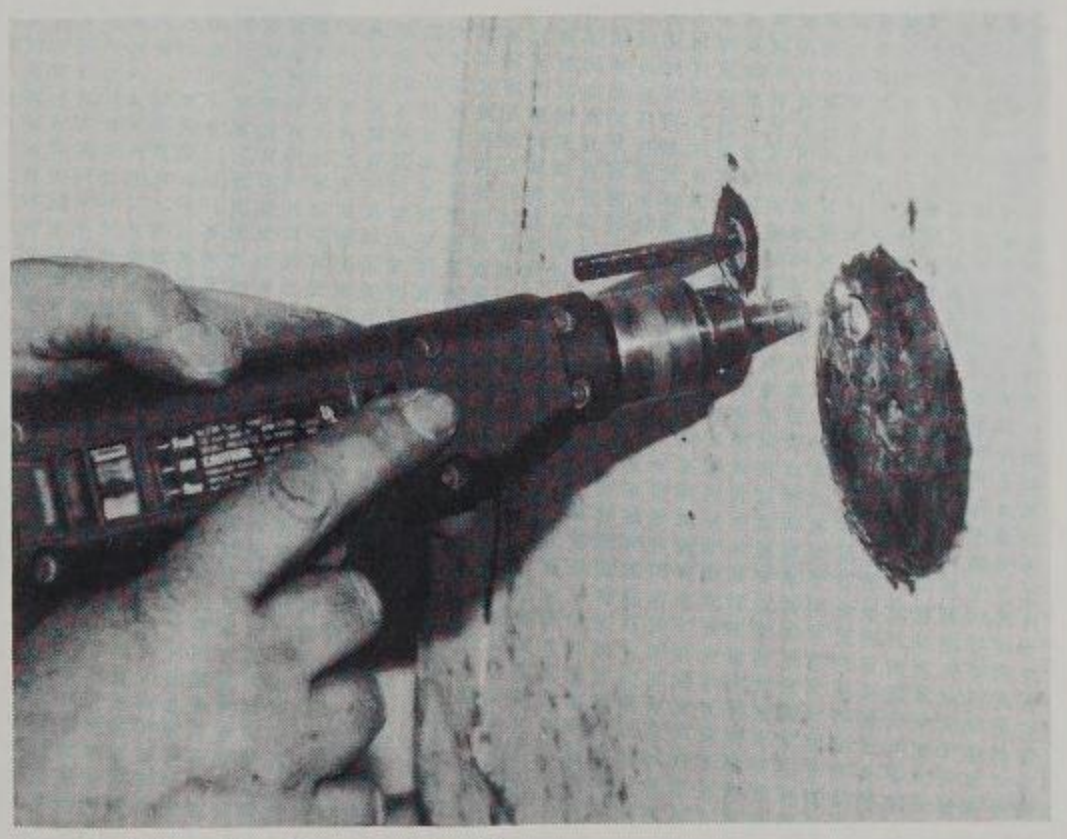
8. Tapping in an Easy-Out to create a makeshift handle.

9. The makeshift handle in place.

Photograph nine shows our makeshift handle sticking out, waiting for us to rotate it as soon as we complete one more preliminary step.

It was earlier determined that the lock was mounted RH, and also that the lock was beyond being finessed open; it is now determined that the easiest (less muss less fuss) way to beat the lock is to blow the lockbolt off the door. So the drill point is marked 2-3/8" LC, and a drill bit is aimed at the lockbolt. (*See photograph 10.*)

Once the hole is completed, a light is shone into it. BINGO, the hole is right on the money. Through it we can

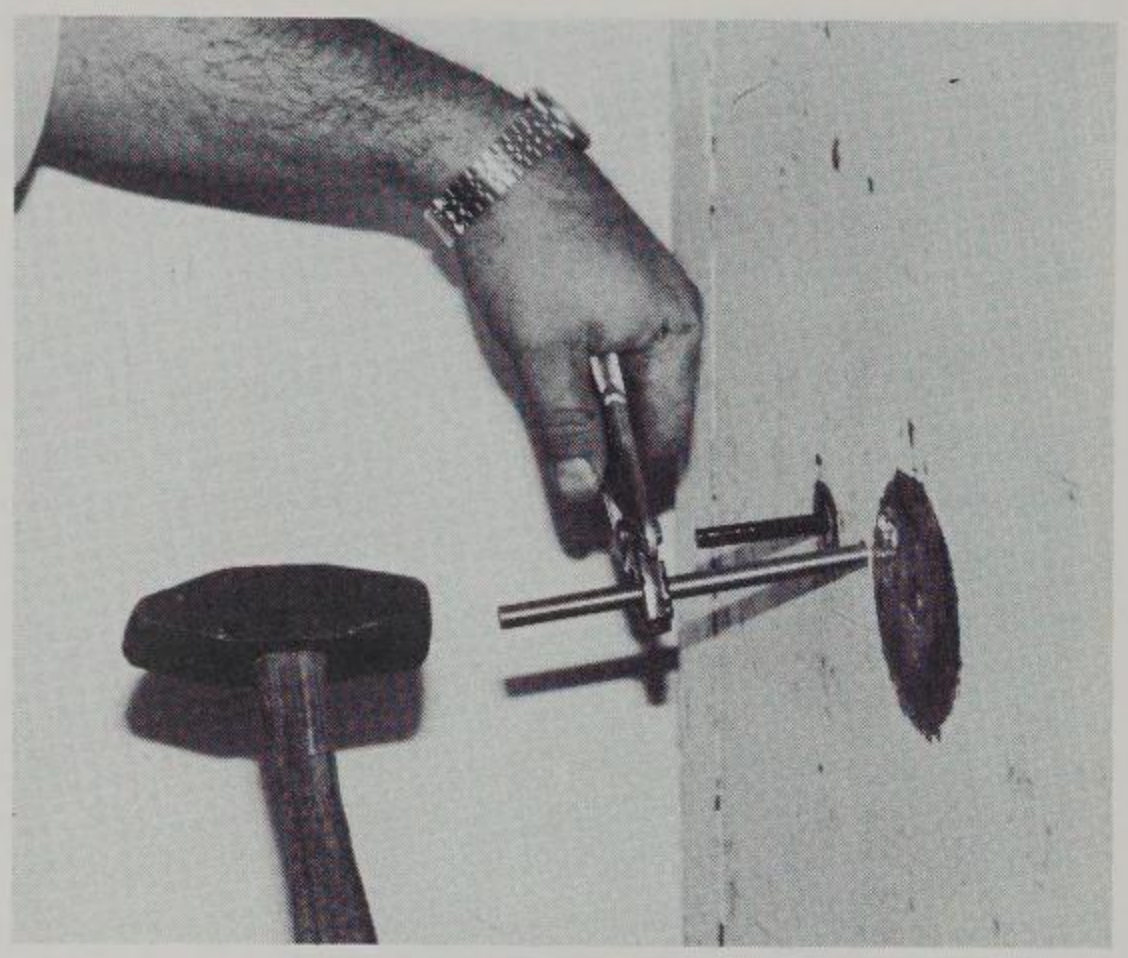


10. Drilling for the lockbolt.

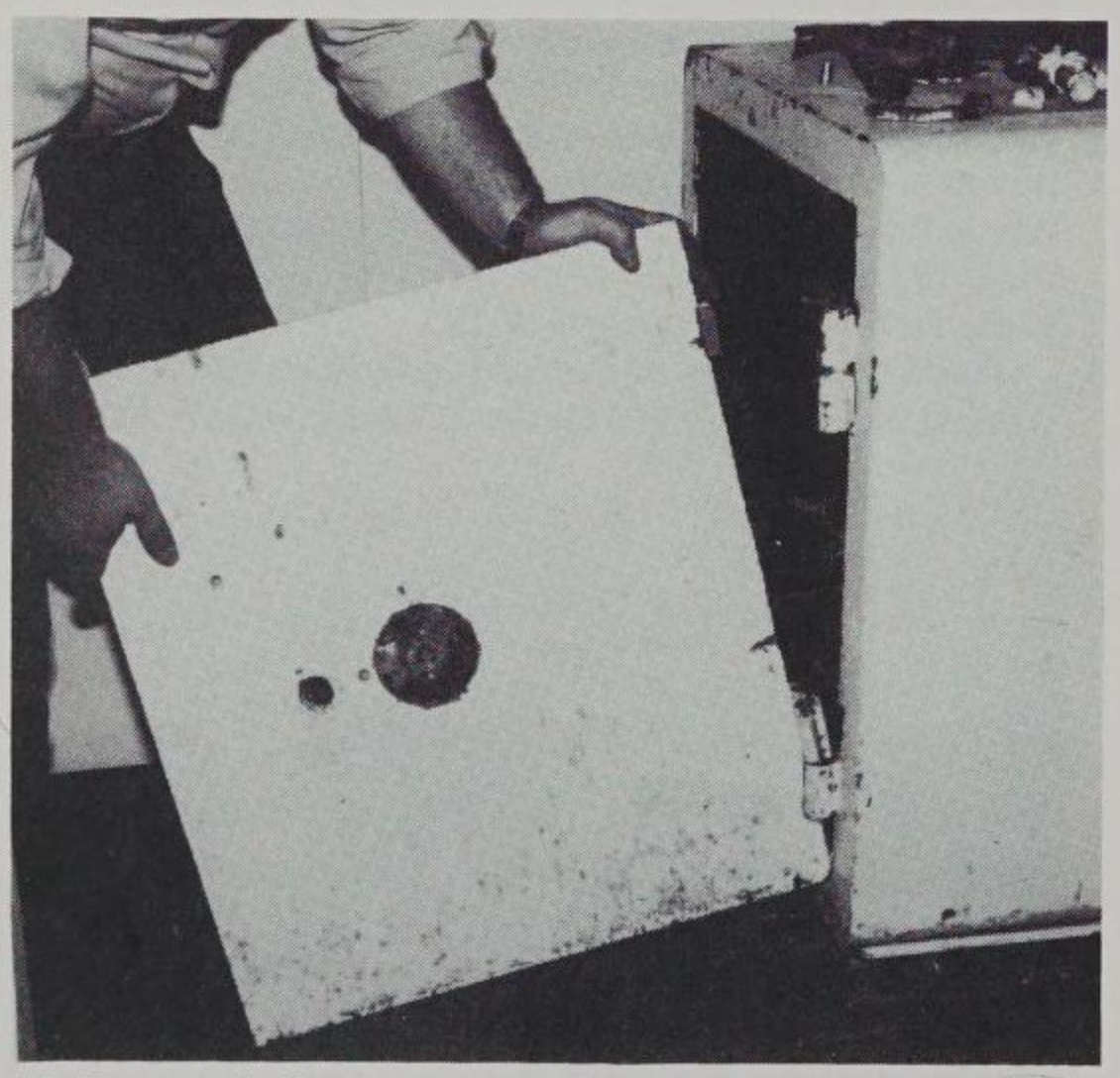
see the brass lockbolt. As we can see in photograph 11, a punch is inserted into the hole, and a hammer drives it inward, sending the lockbolt into orbit outside the safe. A nano-second later I breathe a sigh of relief that this one was not booby trapped like the one my friend Carl Cloud ran across a while back.

With the lockbolt out of the way, there is nothing blocking the boltwork from being retracted. So we clamp a small vice grip onto the makeshift shaft, pull it towards us to engage the handle cam with the boltwork (it had been driven forward and disengaged by the bimbos), and rotate it clockwise to retract the boltwork.

Now the tricky part. We need to swing the door open,



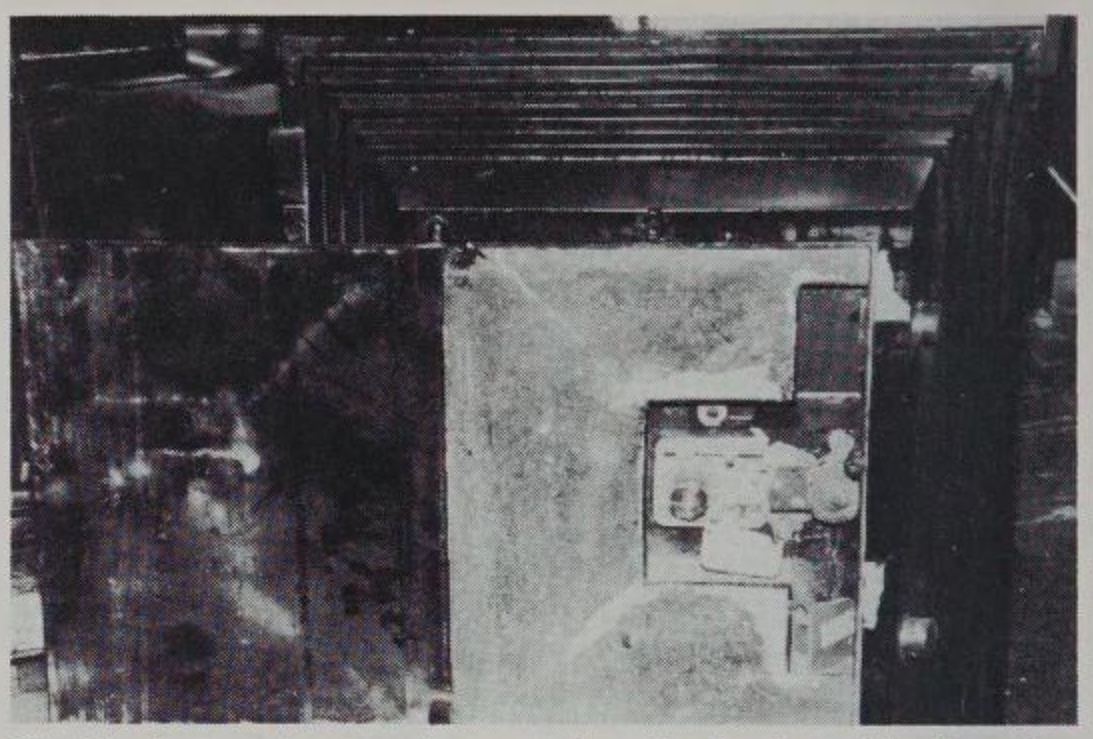
11. Hammering a punch into the hole.



12. Door swinging open. Note the broken hinges.

but we must not forget that the top hinge was broken away. This is a small door, and is close to the ground, so it is easily manhandled, coming open causing no injuries. In photograph 12 we can see that not only was the top hinge broken, but the bottom one was also badly damaged. On larger safes you really have to be super careful when swinging open the door. I don't want to sound like your mother, but failing to respect the weight of a safe caused me a serious injury a few years back, and I don't want you to have to learn the hard way like I did. So dadgummit, BE CAREFUL!

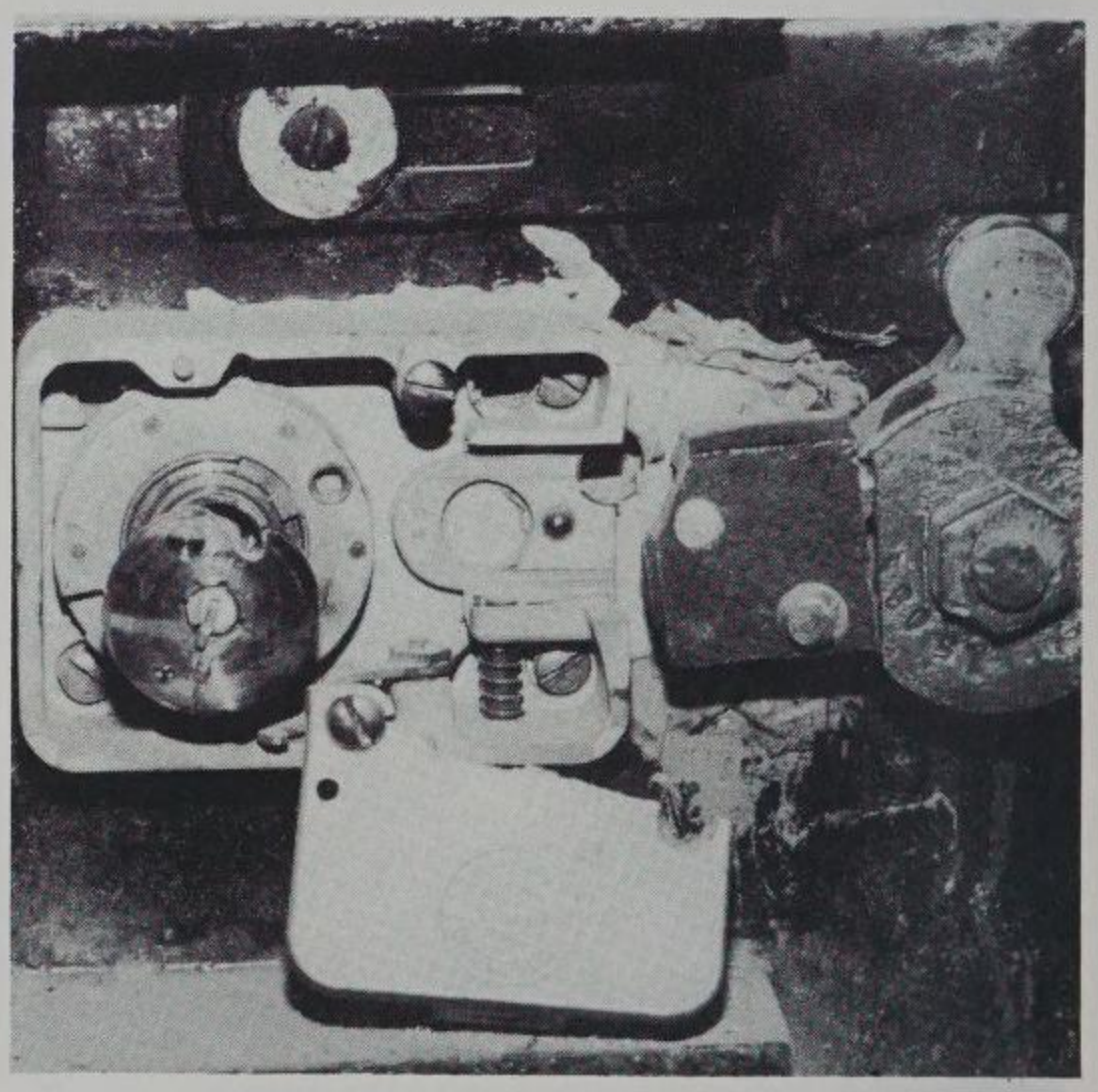
Looking at the back of the door, I notice that the back panel has its own hinge. That is an I.D. clue that makes me think MacNeale & Urban, and Mosler-Bahman. Not that we *need* to identify the safe at this point, but what the heck, it is kinda fun to try and solve the puzzle.



13. Back panel opened, exposing the lock and boltwork.

In photograph 13 the hinged back panel has been swung open, giving us a look at the lock and boltwork. There are two locking bolts on the opening side of this thick door. Half the parts to the lock are laying at the bottom of the door.

Photograph 14 takes us in for a close-up of the area around the lock. Hmmm, the way the lockbolt extension is connected to the handle cam—very odd indeed. My guess is that this was originally a Mosler-Bahman that was tortuously converted from Yale to S&G. No other manufacturer that I am aware of ever utilized a sliding piece in the handle cam that engaged it with the boltwork.



14. Close-up of lock.

The only problem with this safe originally being a Mosler-Bahman is that it is difficult to see how a Yale 062-1/2 indirect-drive lock could have fit. Oh well, another mystery that will probably end up in the "unsolved" file. Sherlock Holmes would be ashamed of me.

Well, I hope you picked up a few pointers on dealing with burglarized safes. Dials and handles are not all that difficult to deal with, just remember to check the hinges carefully for any sign of tampering. Your toes will appreciate it. See ya next month. §

I cannot emphasize enough the importance of checking the hinges after a burglary attack. Sometimes they are cut so cleanly, that you can tell only during an up close inspection. If you value your Nikes as much as I value mine, you won't forget to check. It just takes a minute, and it might save a toe or two.

by Dave McOmie

Safe Spies in the Bahamas

"That night I packed Black Bart and two dozen Strong Arm bits, dressed for humid weather, and booked a ticket for Miami."

It's hell being a spy these days. The cold war is over, and the KGB is suffering from intelligence atrophy—it is getting darned tough to find enemies worth peeping in on! Geez, I used to eat steak and lob; now it's mostly pork 'n beans.

I was whining about this a while back, when the phone rang. It was my old friend Solly Rosen, who runs "Safe & Lox" during the day, and does capers for the Mossad at night. Solly usually farms his safe jobs out to Don Spenard, but this one was too dangerous, so he called in the expert.

"Hi Dave, gotta job for you."

"Great Solly, uh, what's the deal?"

"Well, we (The Mossad) are doing a joint job with your boys (CIA) in the Bahamas. There is a Chubb down there that we need opened."

"What's in it"

"I can't tell you that, Dave. The various elements of this caper are on a 'need to know' basis."

"Great. Then how am I supposed to know what you want me to take out of the safe and bring back?"

"You won't take anything out of the safe. Your contact in the Bahamas will take care of that. You just need to open it."

"Dangit Solly, you know I prefer to work *alone*. So who is my contact, Maxwell Smart or Agent 99?"

"Don't joke around, this is not funny. His code name is 'Terrence.' Look, I can't say any more, this is not a secure line. Rendezvous with me tomorrow at 3:00 p.m. at our regular place."

That night I packed my light gear, which consists of one Makita HP-201ON two-speed drill motor, Black Bart, two dozen Strong Arm bits, a small flexi-scope, a few odds and ends, and the drill points for every model Chubb safe I could get my hands on. I dressed for warm, humid weather, and booked a round-trip ticket for Miami.

The following afternoon at exactly 3:00 I entered our meeting place—a nondescript, obscure little building that no-one would take a second look at (*see photograph* 1).

Solly was already there, in line at the cash register. In his shopping cart was a 30-06 that looks like an umbrella, a wing-tip shoe with a switch-blade that springs out of the toe, a voice scrambler, an auto-manipulator guaranteed to 'open any safe', a set of HPC lock picks, and a video camera that looks like a can opener.

"What the heck are ya doing?" I asked him.

"Helping get you properly prepared."

"WHAT!!! Solly, I am going to the Island of the Grand Bahama, you know, The Big Kahuna; I don't need an umbrella, you know I hate firearms, and anyway, what would I need with a rifle *or* an umbrella?"

"Dave, this job is dangerous. You have to stop imitating Alexander Mundy with that utopian 'I work alone' and 'no guns' attitude. Mundy was a fictional character; you are

1. Dave and Solly rendezvoused at this nondescript, obscure out-of-the-way place that no one would notice.

real, with real flesh and bones that can be hurt by speeding bullets. And believe me, when you see how it can rain in the Bahamas you will realize that an umbrella is standard equipment, even for the natives."

"I don't care. NO GUNS. PERIOD. And I do not, can not, and will not wear wing tips until I am a Grampa. Forget it. And furthermore, you can put the rest of that stuff back, it will add too much weight. Gawd, Solly, a *can opener*? Gimme a break. I will take the auto-manipulator, though. Dang, that is weird—how come we spies get this stuff before the safe and lock guys do?"

"Darned if I know. Dave, about this stuff, I am just trying to help."

"I know, Solly, but you are best off leaving the double-0 stuff to me. You can help by giving me the portfolio containing the info on my assignment."

"Okay, but I am still going to buy the rest of this stuff. If you don't want it, I can mark it up and sell it to Marc Goldberg. He has always dreamed of being a legendary field operative like you."

I cracked up, and Solly grinned. I felt better, knowing that his feelings weren't hurt too bad. He paid for Goldberg's goodies, gave me the portfolio and the auto-manipulator, and we said good-bye.

Sitting on the bed in my hotel room that night, I opened the portfolio and pulled out a single piece of paper. On it was the following:

YOUR CONTACT IS "TERRENCE" STOP WORKS COVER JOB AS LOCKSMITH AT NELSON & SONS IN FREEPORT GRAND BAHAMA STOP IS FAMILIAR WITH TERRITORY AND IS RESPONSIBLE FOR SECURING DOCUMENTS IN SAFE STOP WE INTERCEPTED A DECODED A MESSAGE GIVING LOCATION OF SAFE STOP HOWEVER THE DECODED MESSAGE IS ITSELF STILL CRYPTIC STOP IT READS

"SAFE—JUNCTION INTERSECT—COLUMBUS ST...EARLY MORN...STOP"

AS PER STANDARD ARRANGEMENT IF YOU SHOULD BE CAUGHT THE U.S. GOVERNMENT WILL DENY ANY KNOWLEDGE OR INVOLVEMENT STOP THIS COMMUNIQUE WILL SELF-DESTRUCT IN FIVE SECONDS STOP GOOD LUCK DAVE STOP YOUR COUNTRY IS DEPENDING ON YOU END

I caught an early morning puddle-jumper to Freeport, and met "Terrence" (which turned out to be his real name) at his place of employment. Nelson & Sons is quite a shop, and Thomas and Ryan seem like great guys to work for. They didn't suspect a thing.

When I told Terrence the message, he looked curious. "There is no Columbus street in Freeport" he said, "and I don't know what they could mean by 'early morn.'" Neither did I. The truth was that the so-called "decoded" message was still a cryptic cipher to me. So I decided to have a look around the island.

Renting a scooter was easy, but remembering to drive

2. Superspy Dave McOmie is searching the backroads of the Grand Bahama Island for clues to the safe's location.

on the *left* side of the road was not. Making a right hand turn from the left lane just about got me killed, so I retreated to the backroads. (*See photograph 2.*).

I was motoring around, catching a few rays and a lot of bikinis, when I came to a street sign that caught my attention (*see photograph* 3). The first thing that grabbed my eye was the Bahamian stop sign. A triangle inside a circle. Cool. Then I saw the name of the street: "Sunrise". Hmmm. Part of the cipher had read "early morn." I

3. Clue #1: Sunrise. Connection to "early morn?"

wonder....

Energized by this possible clue, I sped down street after street, looking for something that would mesh with "Columbus". I had just about gotten used to driving on the

4. Clue #2: Santa Maria and Pinta. Connection to "Columbus." No bout-a-doubt-it.

left, and was getting off on the cool-looking Bahamian signs when all of a sudden I was jolted back to the U.S. by the stop sign shown in photograph four. That's odd, I thought, why would they use a mixture of Bahamian and American signs? Then I glanced at the street names and the real clue hit me like a freight train. I was at the intersection of "Santa Maria" and "Pinta". That's it—the connection to Columbus! How clever these enemy spies were. I was almost as impressed by their ingeniousness as I was by my own superior sleuthing ability. But what did it all mean?

I stopped at the nearest phone booth and gave Terrence a call. (*See photograph 5.)* When I relayed my findings, he got out a map and started plotting coordinates. "Well now, this is interesting" said Terrence. "The coordinates for Pinta and Sunrise do not intersect, but the coordinates for Santa Maria and Sunrise do—right in the middle of the President's 500 acre ranch. *Bingo.*"

"Good work Terrence. Meet me outside the main gate at the ranch at dusk."

"Roger."

"No, it's Dave."

"Roger, Dave."

We met as planned. Terrence carried a compass in one hand and a duffel bag in the other. He pulled out a small pair of bolt cutters and in thirty seconds we were inside the barbed wire encampment. Eyeing the compass, Terrence led the way through the underbrush.

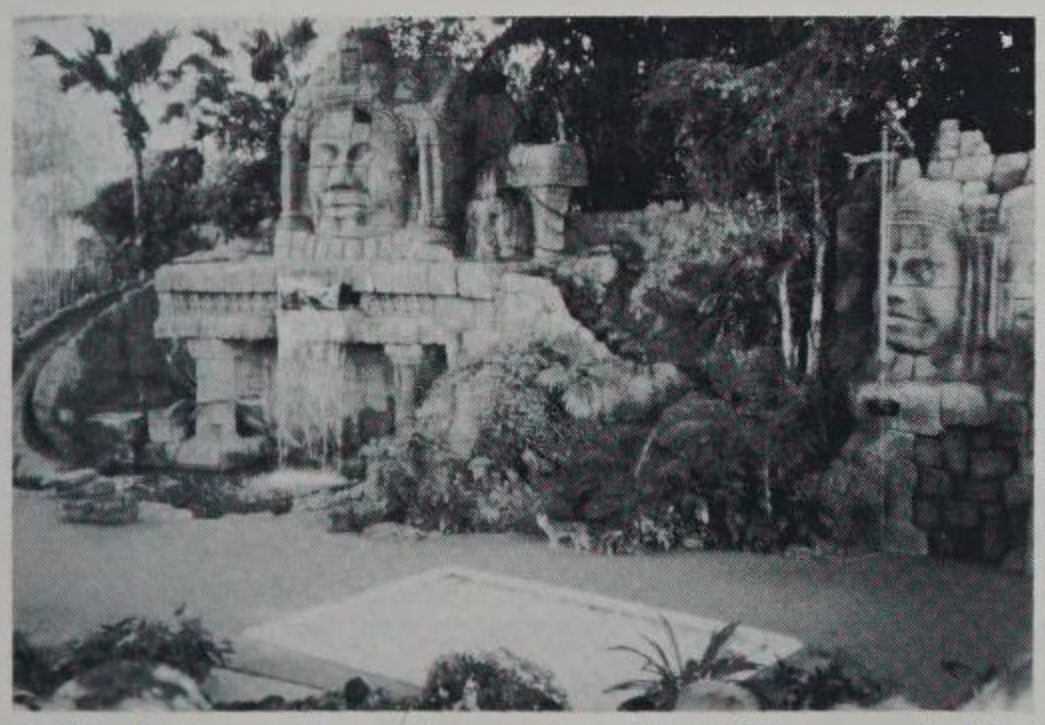
As we came upon a group of palm trees, Terrence said "this is it, this is where the lines intersect." But there was no safe or even a sign of civilization. We looked around. Everything looked in place and normal, except for...what? I couldn't put my finger on it, but something was not quite right. Then I looked at the group of palm trees and realized that one of them didn't quite fit in. Walking over to it I could tell that it was a fake. But why?

I ran my hands over the trunk and was surprised when a hinged panel swung away. There were two buttons on the panel, one green and one red. I pushed the red one and the ground started to tremble under our feet as a trap door slid open.

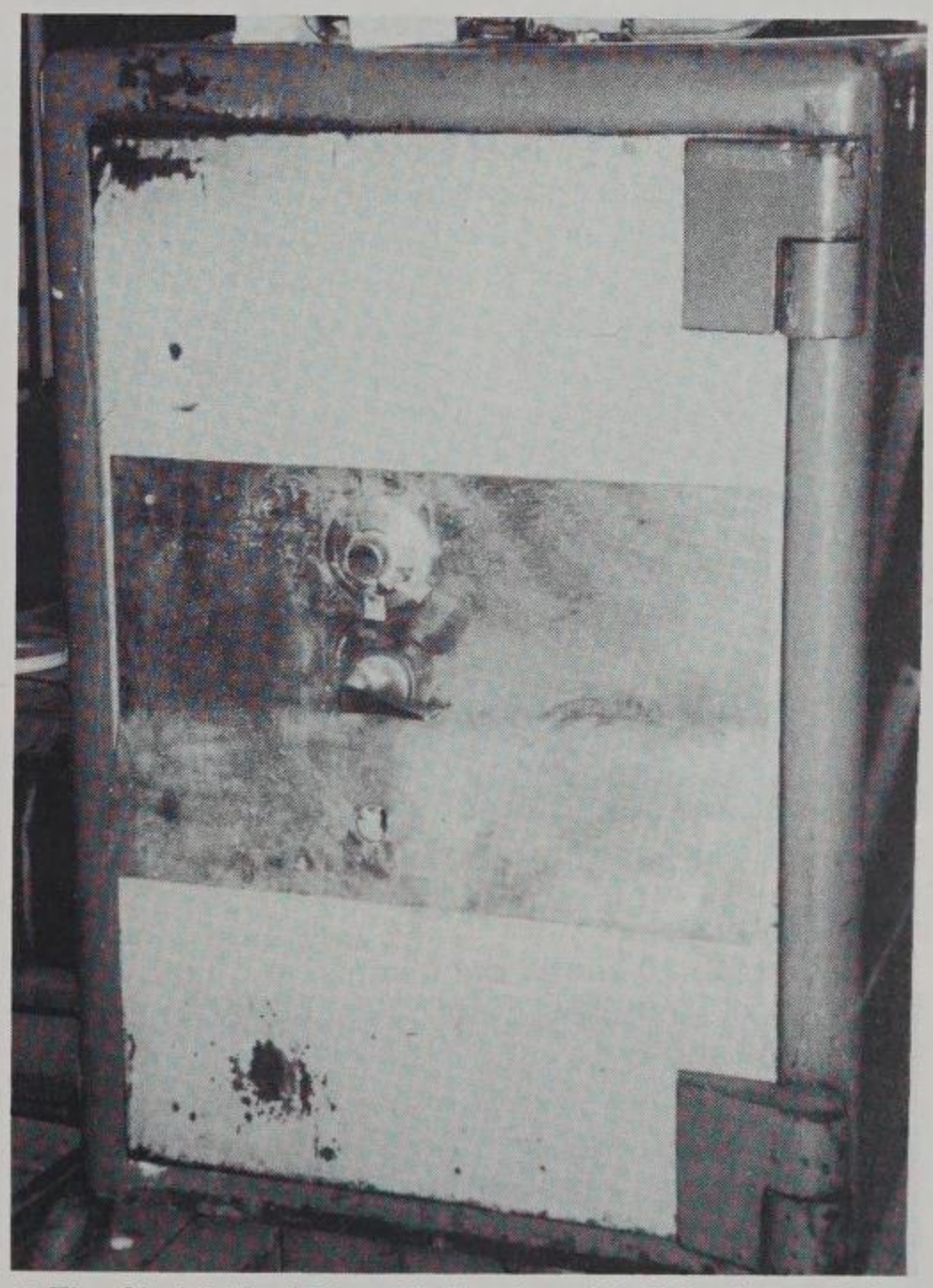
We gathered up our duffel bags and scurried through the door. Just inside was another panel with green and red buttons. This time I pushed the red one and the trap door slid shut behind us.

Ahead lay a concrete tunnel. Terrence and I crept along toward the light we could see at the end of the tunnel. As we approached the light, we saw something right out of an Indiana Jones movie. (*See photograph 6.*).A fortress. Guarded by leopards. And inside was undoubtedly the safe.

5. Phoning home? No, relaying information to the contact. Sean Connery doesn't have a thing on Dave, does he? Well, maybe the accent...and a few million dollars.

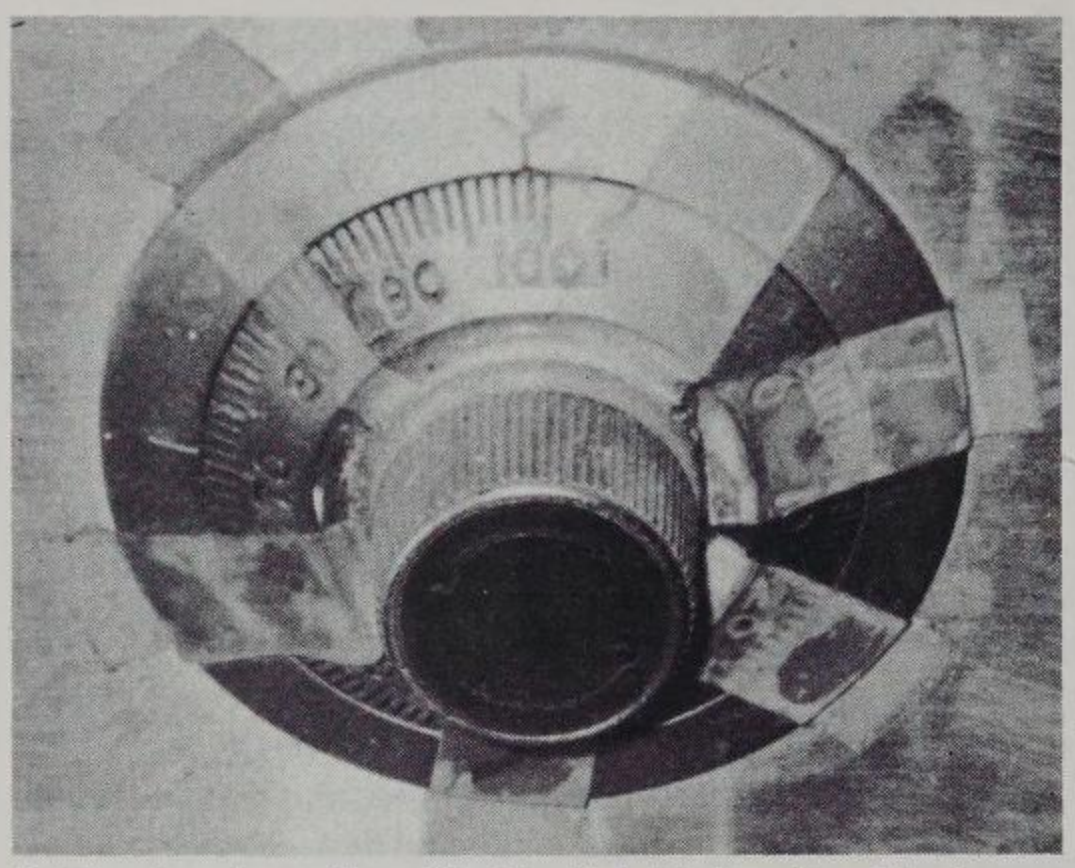


6. The fortress. The safe was found in a little room behind the face on the left. Notice the leopard (bottom center).



7. The Chubb First-Strength Torch and Drill Resistant Safe.

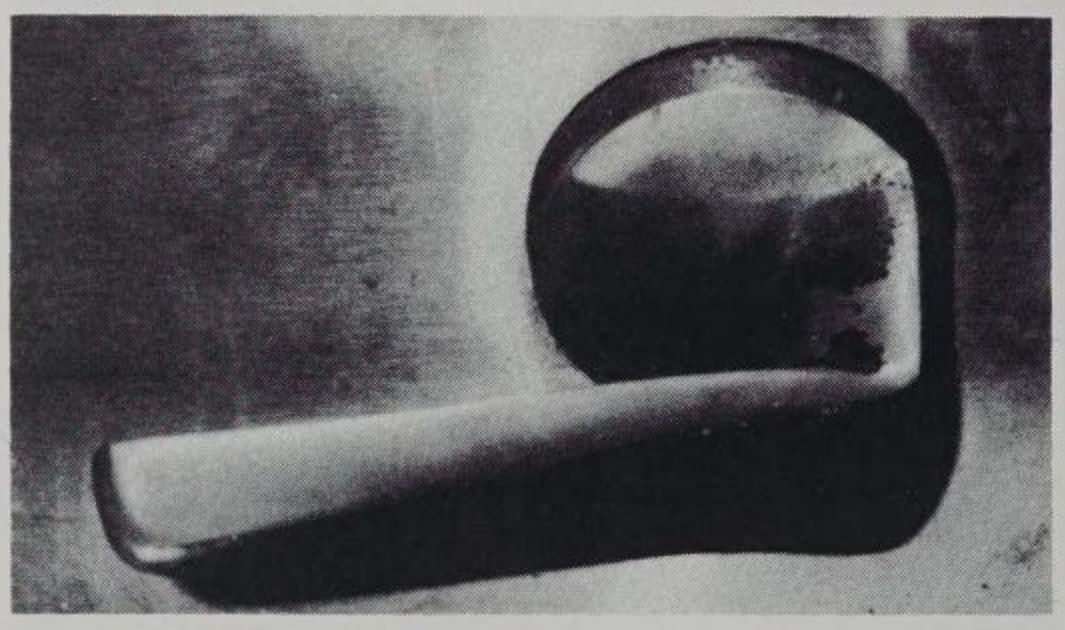
Not stopping long enough to be intimidated or scared, we scaled straight up the face and avoided the leopards. Vaulting over the top, we found ourselves in a small room. And lo and behold, there was our target: an English Chubb, either an ABP or a TDR, both formidable opponents. (*See photograph 7.*) Looking close, I notice that the door sticks out from the body, identifying this as a TDR, either a first or second strength.



8. The front-reading Chubb dial. Notice the blank area between 100 and 0. In the center of the dial knob, Chubb put arrows going clockwise and counterclockwise. Try to figure out why. There's no indication of right or left.

In photograph eight we have a close-up of the Chubb dial. This is an old-style front reader, with a blank area in the so-called 'forbidden zone' between 100 and 0.

Photograph nine is of the bolt-control handle. Even though this safe is almost as old as I am, the handle looks remarkably modern.

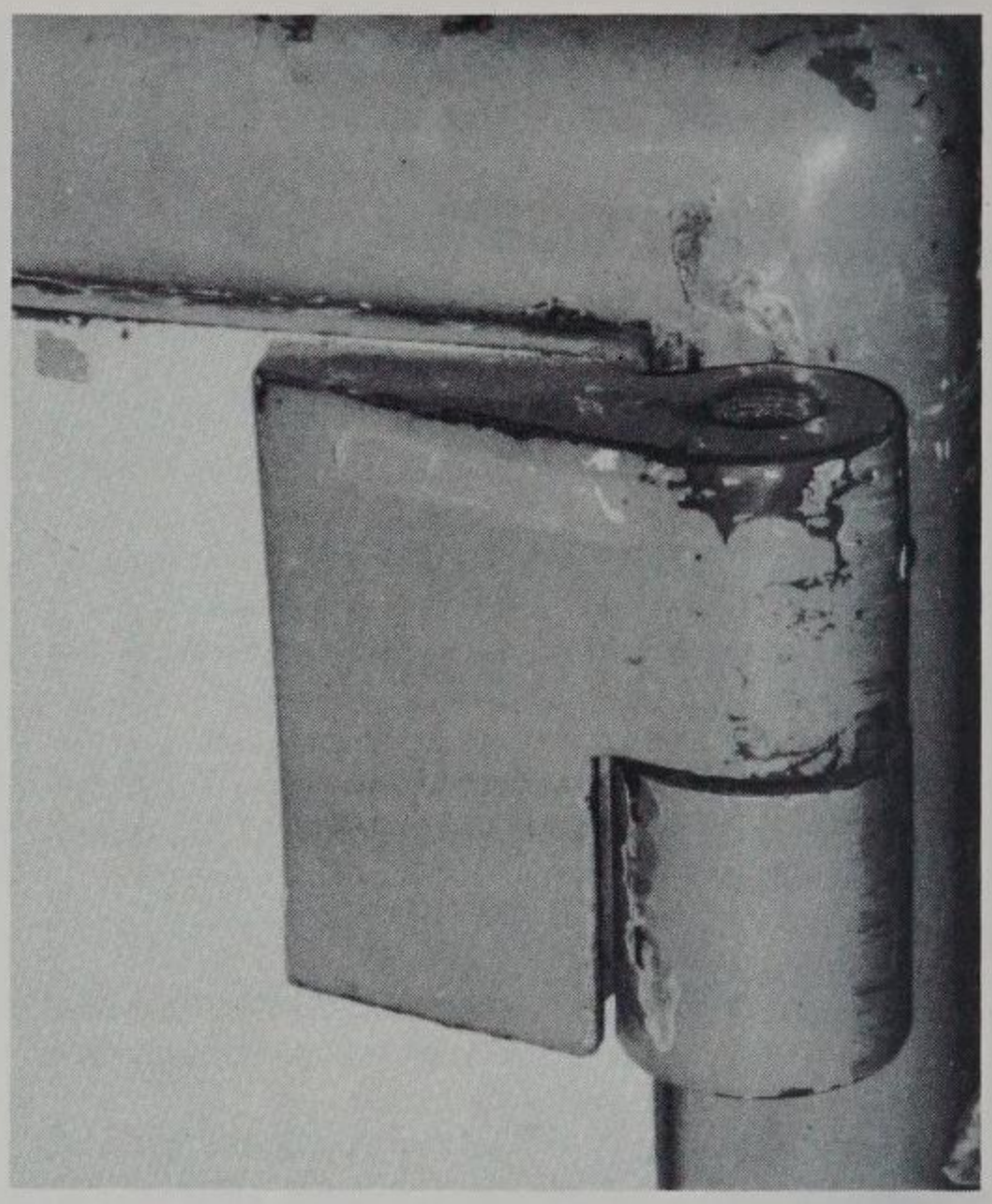


9. The Chubb L-handle.

Photograph 10 shows the distinctive Chubb hinge. These are all very good identification aids—Chubb dials, handles, and hinges are often distinctive.

Terrence was looking around the room, and suddenly became alarmed. "Shoot Dave, there is no power in here. You can't drill it."

"Oh no, you're right Terrence. But let me check something else." I fished in my duffel bag and pulled out the football size auto-manipulator, in the hope that it would have an alternative DC power supply. No such luck.



10. The Chubb hinge.

I started to panic. Then I calmed myself down and mentally prepared to manipulate the 4-wheel Chubb lock. Pulling up a stool, I grabbed the dial and tried to give it a twirl. But it wouldn't budge. Then I noticed that it was taped in position. My heart jumped into my mouth. There is only one position that anybody ever tapes a dial in, and that is the *unlocked* position. Oh my gawd, it can't be. It has to be!

"Terrence, I think I will have this safe open in a jiffy."

"Oh man, Dave, they told me you were good, but I had no idea you were *this* good!"

"You just keep watch for guards while I work on the safe."

"I yam, I yam."

My hands were trembling as I peeled back strip after strip of tape. After the last strip was gone, I took a deep breath, lightly gripped the dial and rotated it clockwise. The dial stopped almost immediately...

To be continued next month. §

This was scary. I get nervous just reading about it after the fact!

by Dave McOmie

Safe Spies, Part II

"Here is the exciting conclusion of Dave Mc Omie's tale of espionage and safe opening. What a guy!"

My hands were trembling as I peeled back strip after strip of tape. After the last strip was gone, I took a deep breath, lightly gripped the dial and rotated it clockwise. The dial stopped almost immediately—the lock was open! "I've almost got it" I whispered to Terrence. "Wow!" he said in response.

As Terrence walked over to where I was, I decided to keep the secret and ham it up. Every closet magician loves to flaunt his favorite flourish. So I put my ear right next to the safe and jiggled the dial a little. And then my worst nightmare happened: I couldn't get the little son of a you-know-what to drop back in! Oh God, this can't be happening!

Just for the sake of impressing Terrence, who was already blown away, I had oscillated the dial causing the lockbolt to extend; the fence had popped out and now would not fall back in. Severe stress hit, and my forehead began to glisten.

Take a deep breath, I told myself, and *count to ten*. Okay, now what can I do to get this stupid little Chubby safe open? Let's analyze the problem. The fence popped out but won't fall back in. I know that I did not turn the dial far enough to have moved the fourth wheel out of alignment. What has likely happened is that the fence jumped out of the wheel gates, and that they are not quite lined up perfectly enough for it to drop back in. So what do we do? My mind goes from numb to normal and says "oscillate madly and whack the door."

"Terrence, pound on the door while I wiggle the dial."

"Where Dave?"

"Right here, just above the dial."

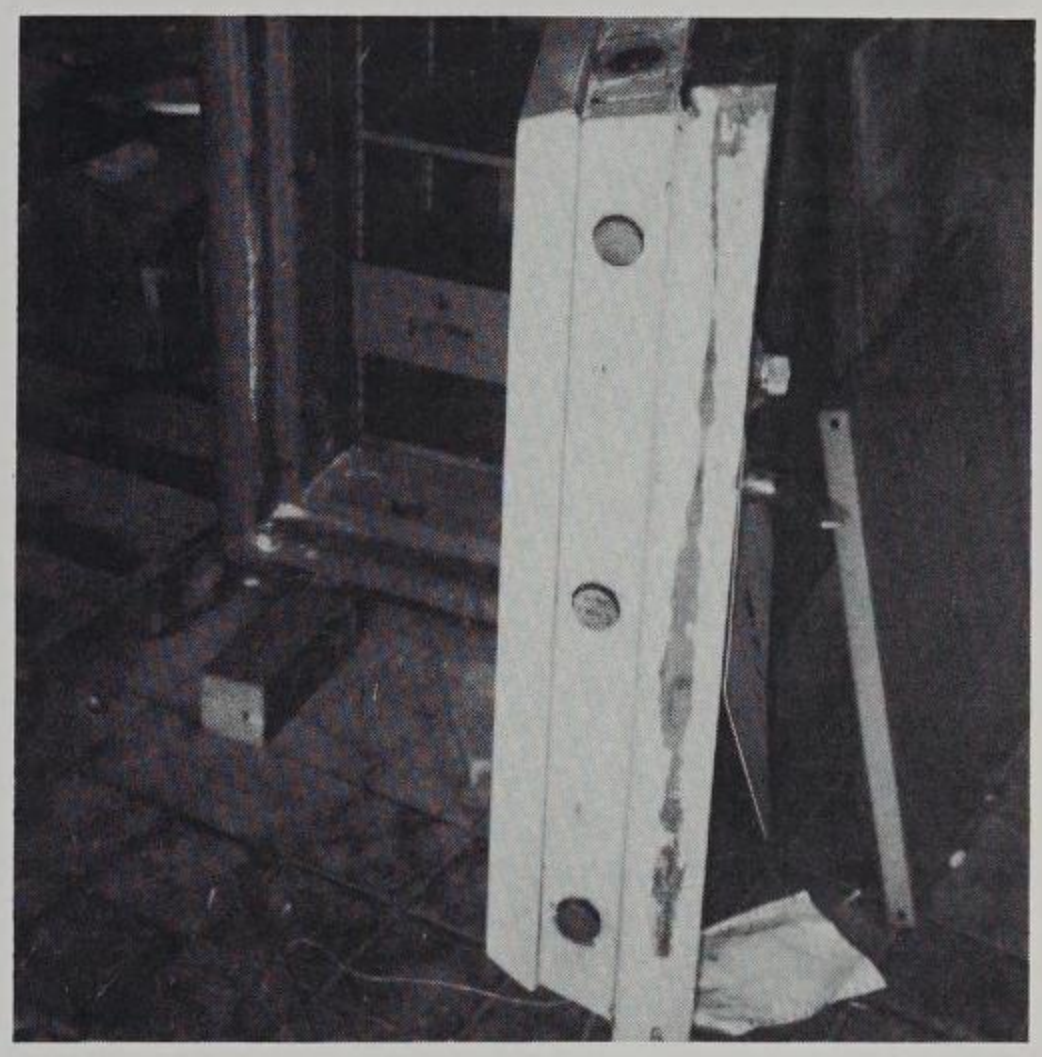
On Terrence's third whack, I felt the nose of the lever drop into the gate on the driver. What a rush. I then retracted the lockbolt. Double rush. All that remained was to see if the keylock was left unlocked. If it was, we were in.

"All right Terrence, here goes the acid test." I reached down, grabbed the handle and gave it a clockwise twist. The boltwork retracted as smoothly as the latch on a Mercedes door lock. Triple rush.

I swung the door open, and remembering Terrence's responsibility for the contents, got out of the way. As I was moving away from the safe I glanced inside long enough to see that the safe was completely empty. "What the hell?" I said to no-one in particular. (*A side view of the door with locking bolts retracted is seen in photograph 1.*)

Terrence glanced inside, turned to me and said, "Dave, we suspected that this might happen. What we need is inside the back panel. You need to open that next."

"The back panel?!" I shouted, "that is held on by two



1. A side view of the open door.

crummy little lever locks, and I didn't bring any picks with me. We'll have to drill them."

"Let's do it" commanded Terrence.

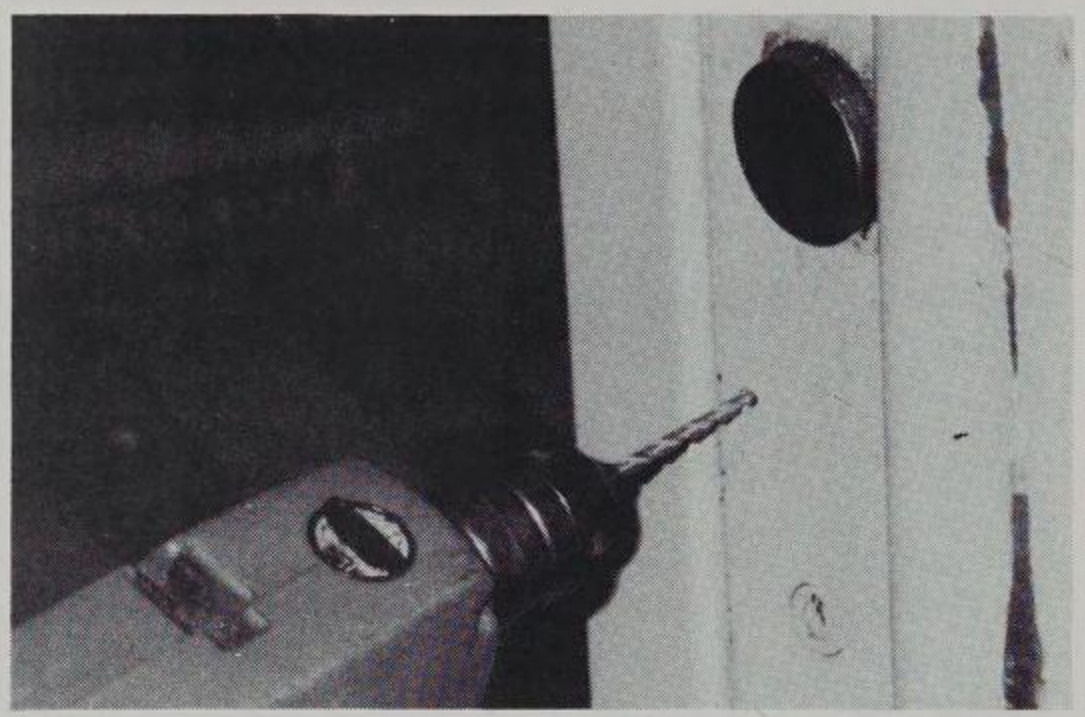
"Hey Terrence, I did the outer door—the hard one, it's your turn, you do the easy one."

"Okay, fine with me. But you'd better be a good look-out."

I whipped out the cordless drill, chucked in a bit and turned Terrence loose to drill the keylocks on the back panel. (*See photograph 2.*)

2. Terrence prepares to drill the lower keylock.

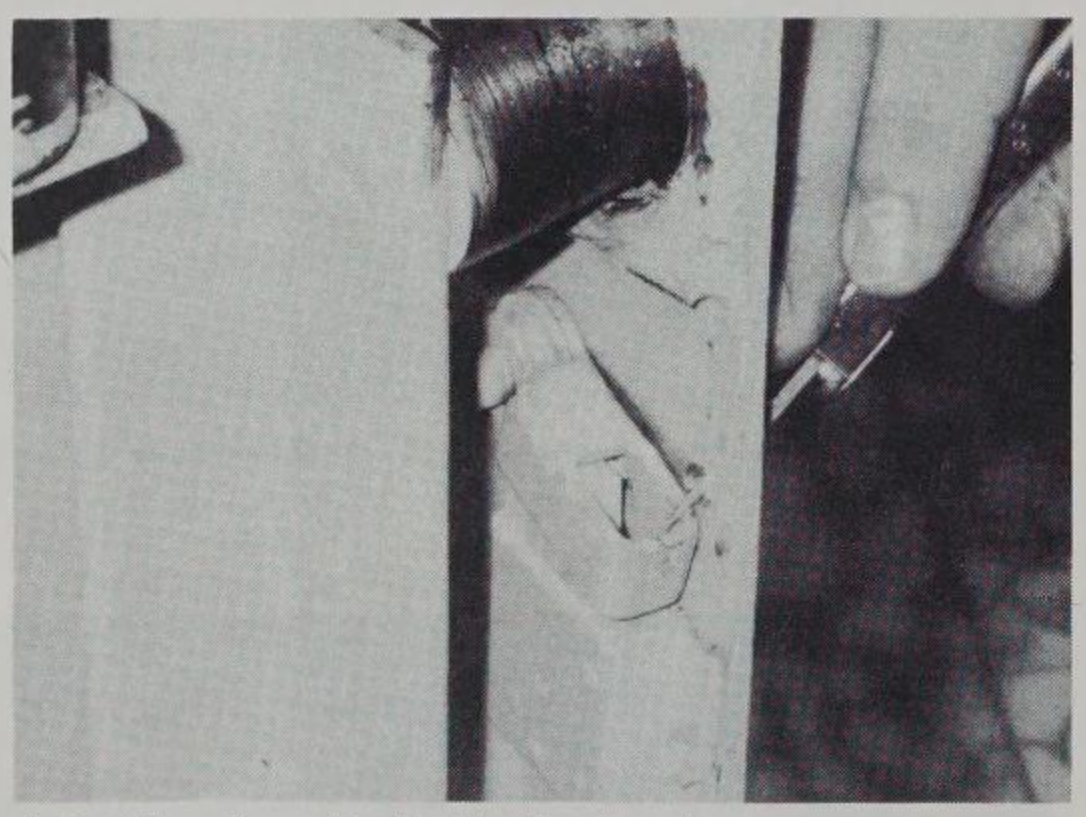
In photograph three you can see where Terrence is making penetration to beat the lower keylock. Notice how far above and to the left the drill bit is from the keyhole of the lock.



3. Penetration time with the cordless drill. Notice that the hole is being made above and to the left of the keyhole.

Next a probe from a Leathermen's Tool was inserted into the hole to pry the pivoting lockbolt extension down. This process was repeated for the top lock and the back panel was open. With the back panel open I snapped photograph four to show you exactly what the probe is doing to the lockbolt extension.

While Terrence was rooting through some documents that had been taped inside the back panel (which were For His Eyes Only) I decided to snap a few photos of the safe. Even in this moment of grave danger, I was thinking of my

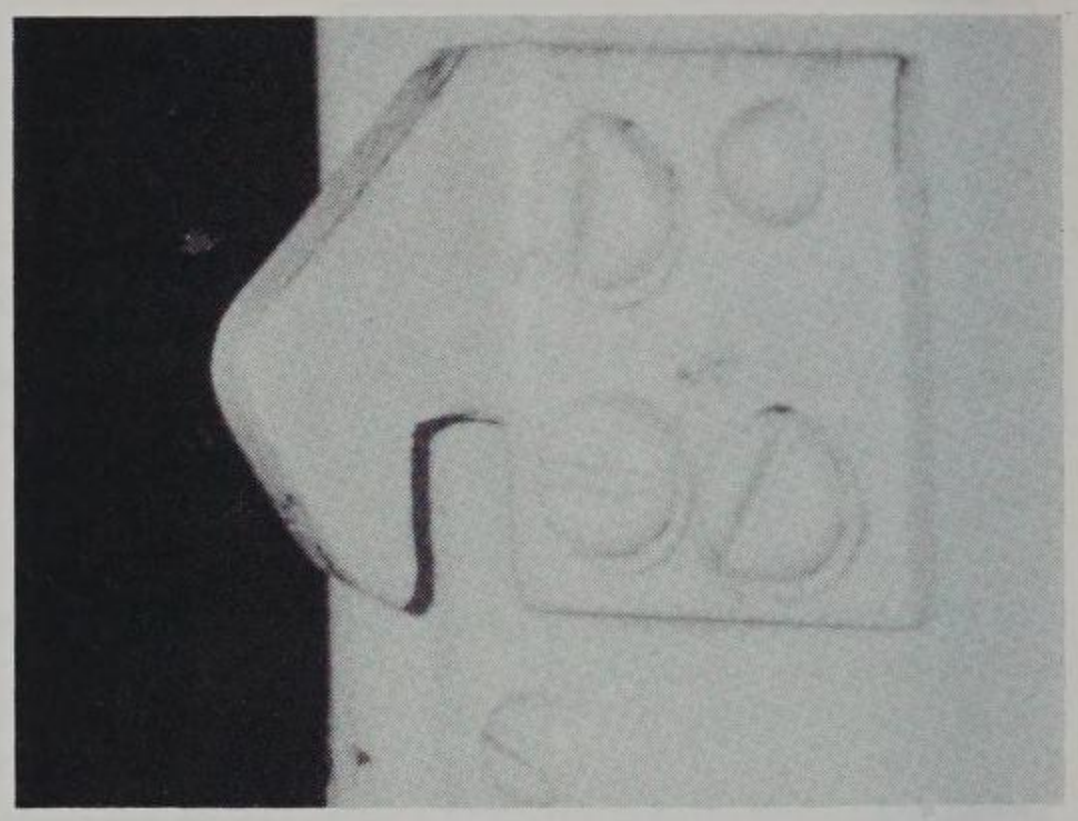


4. Probing down the lockbolt extension.

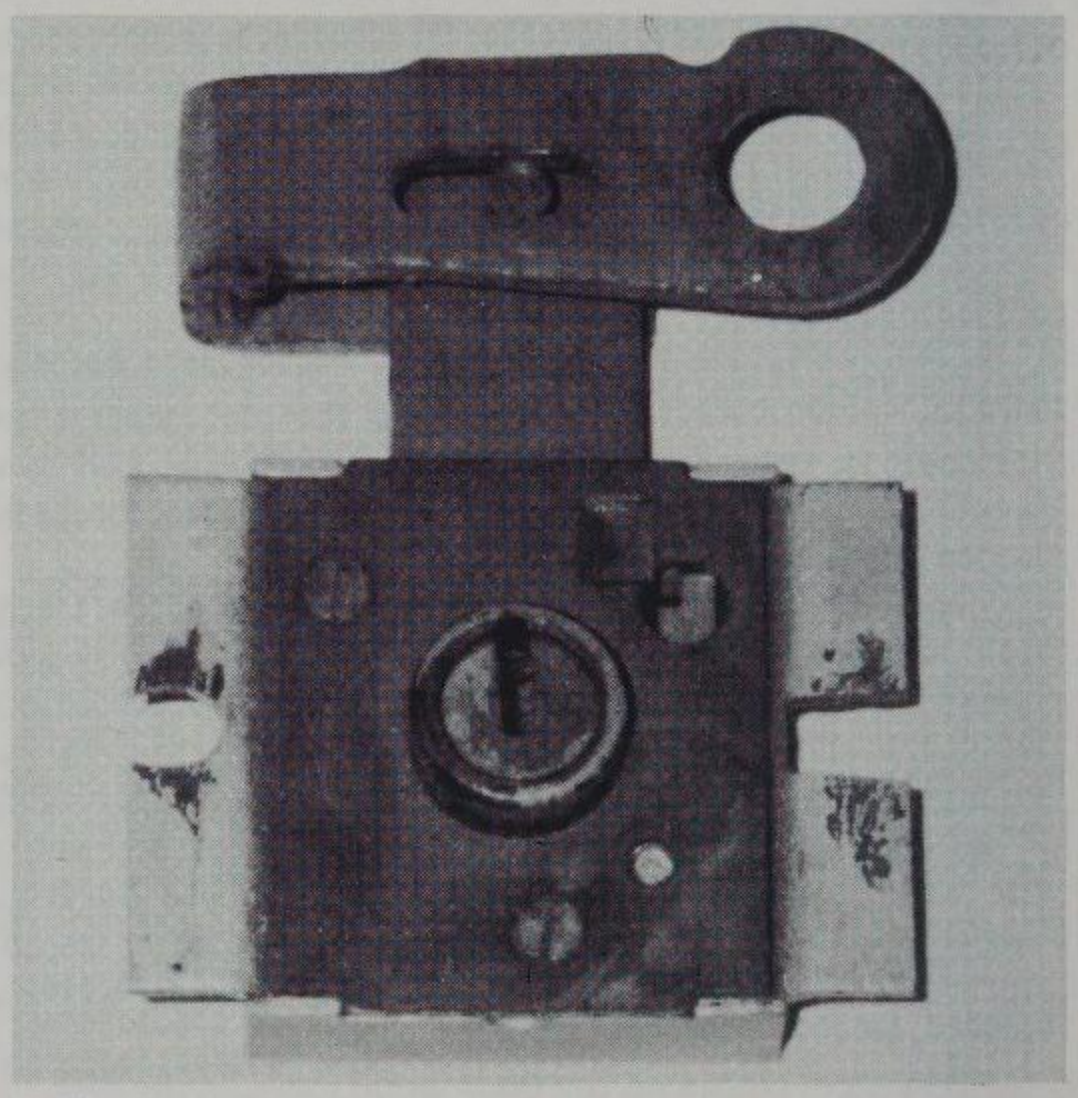
responsibility to bring you, the readers of *The National Locksmith*, the very best in safe information.

In photograph five we see one of the two hooks on the back panel. The hooks are stationary, and they latch into the lockbolt extensions on the keylocks. When the correct key is inserted and turned, the lockbolt retracts, causing the extension to pivot and release its hold on the hook.

Photograph six should clarify things. This is a front-view of the keylock Chubb uses on many of their locking back panels. The round hole at the right of the lockbolt extension is where a screw attaches it to the back panel. The other end of the extension is where the hook engages, and is also the side that pivots down when the key is turned (or when you drill and probe).

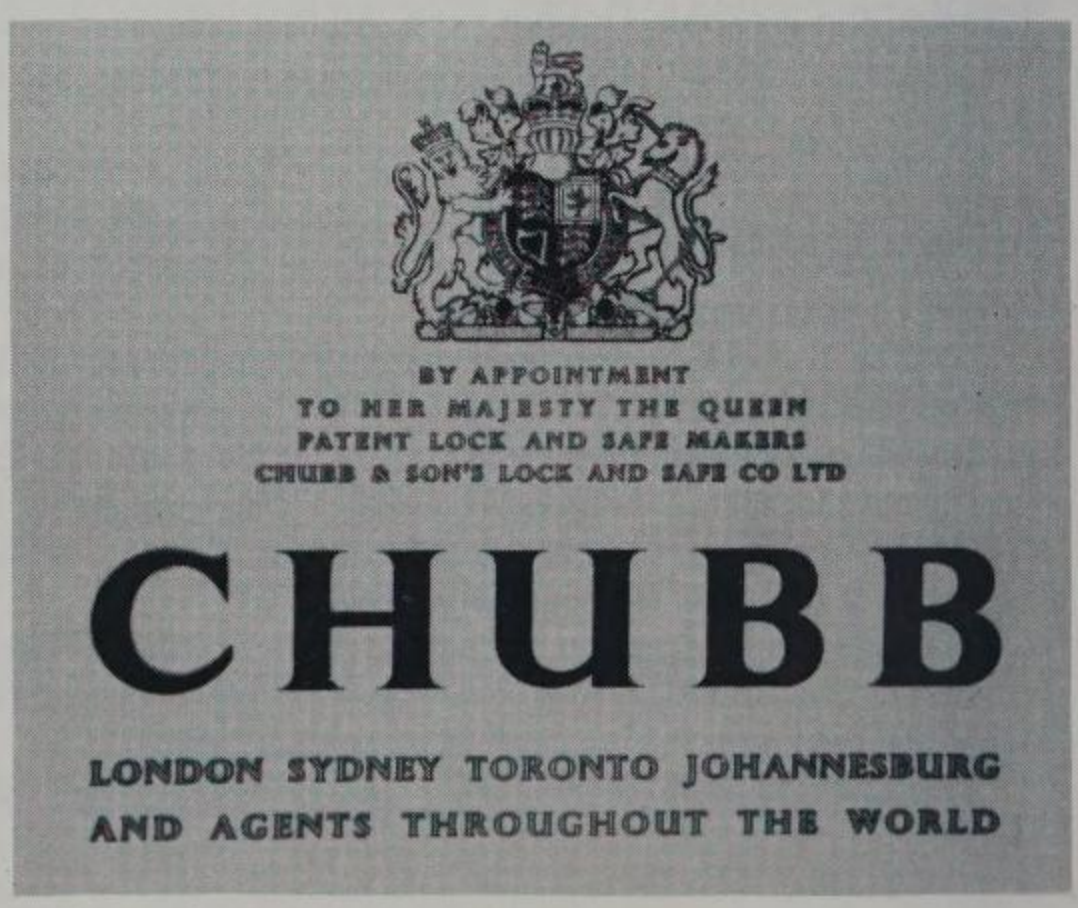


5. One of the hooks on the back cover.



6. The keylock used by Chubb to lock on the back cover.

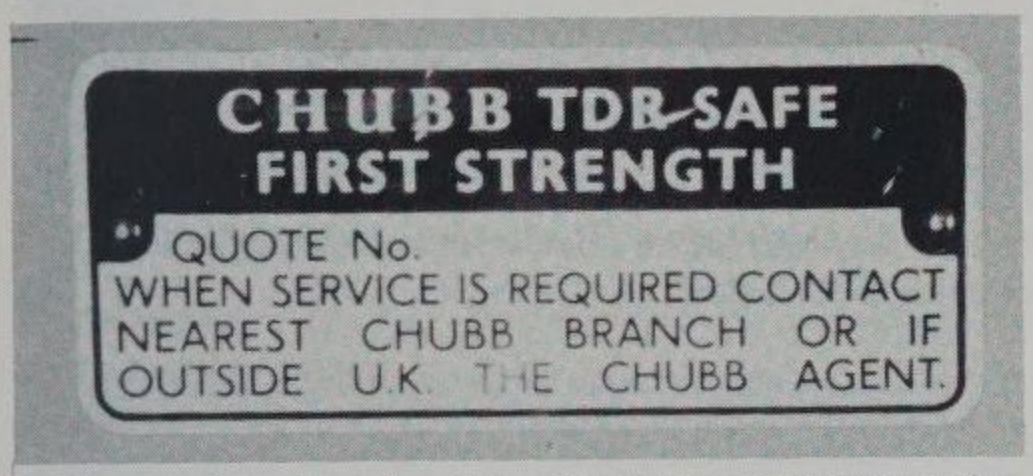
Photograph seven shows the majestic Chubb royal warrant. That is one hell of a logo. Just imagine, "BY



7. The majestic Chubb royal warrant.

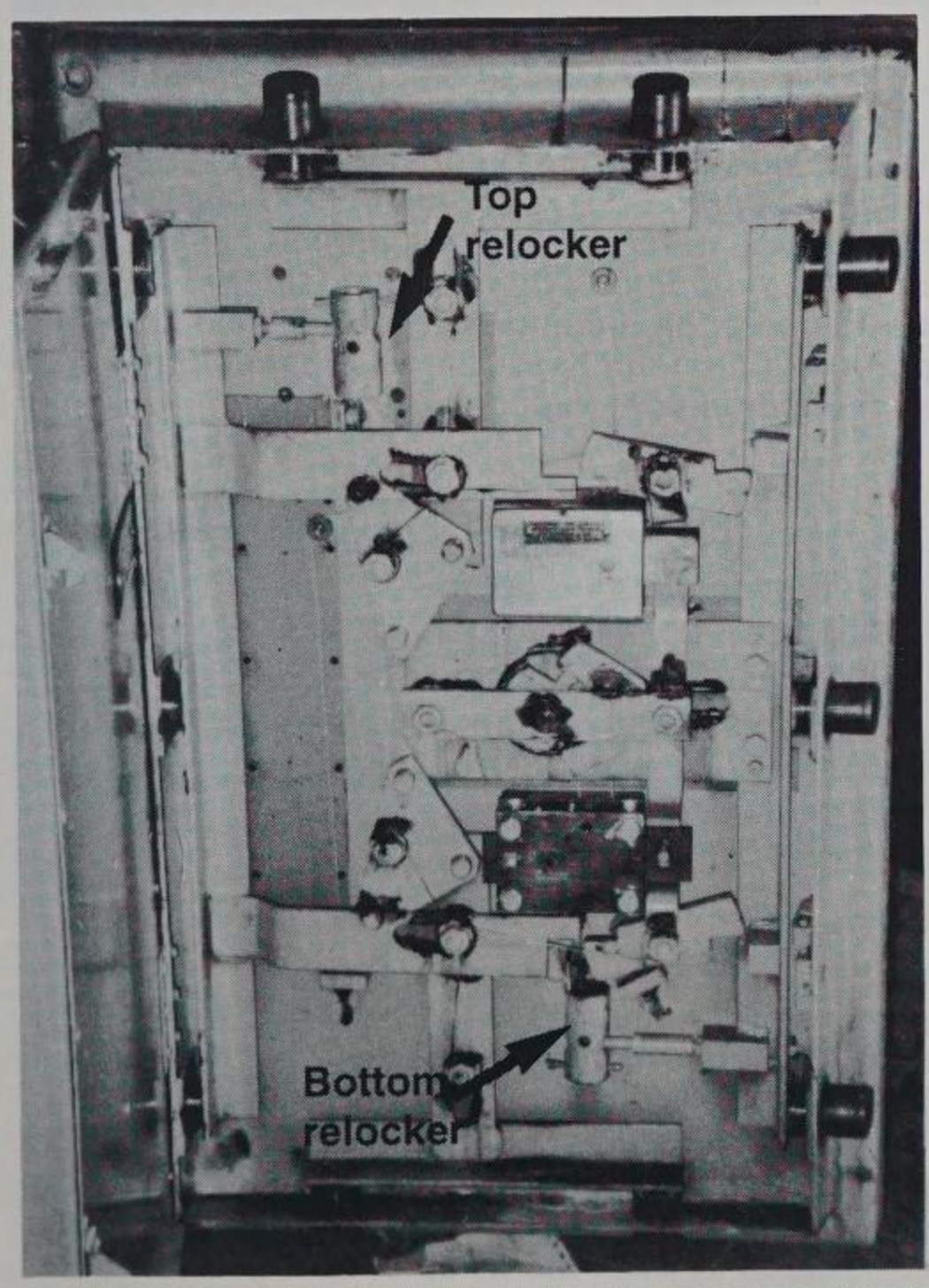
APPOINTMENT TO HER MAJESTY THE QUEEN." Wow, that inspires me, but then so does any garden variety princess.

Also on the back panel is the label shown in photograph eight, designating this a "CHUBB TDR SAFE FIRST STRENGTH." I am not exactly clear just what the difference is between FIRST STRENGTH and SECOND STRENGTH. But I will guess that it is something like the difference between a TL-15 and a TL-30, only at a higher level.



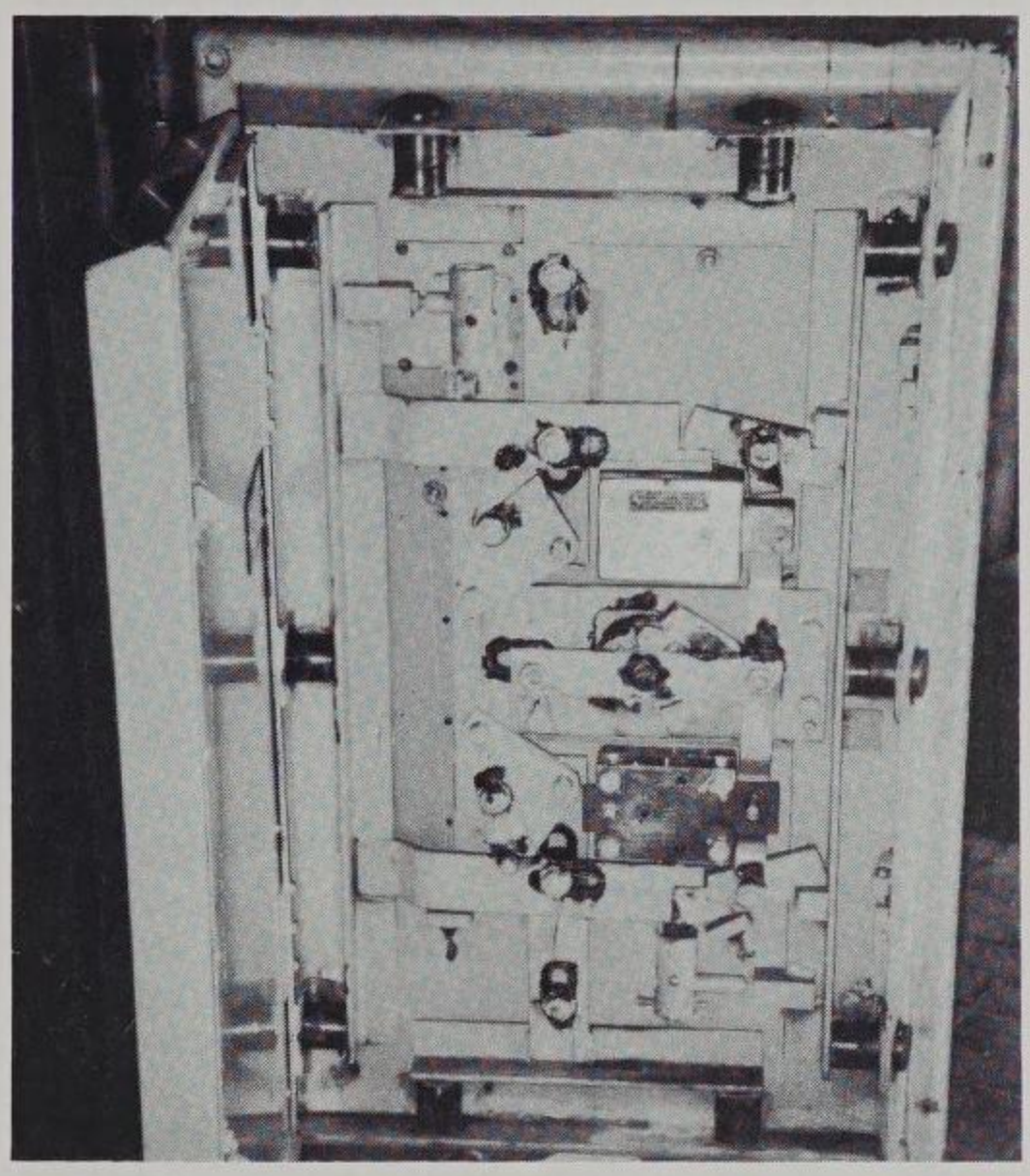
8. The label designating this a First-Strength TDR Safe.

In photograph nine we see the inside of the door with the dreaded locking back cover swung open. The boltwork is in the extended position, however both locks are in the unlocked position. The combination lock is about a foot above the keylock. The arrows are pointing to the two relockers.



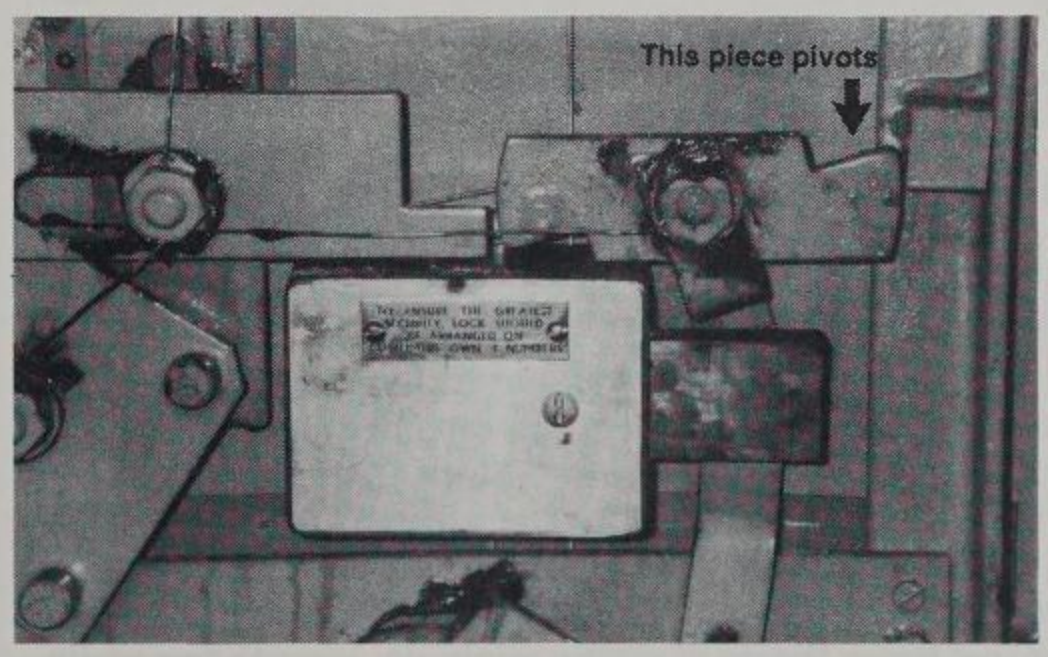
9. The inside of the Chubb door. this is a 4-way boltwork which means there are active locking bolts on all four sides. The arrows are pointing to the relockers.

In photograph 10 the handle has been rotated, retracting the boltwork. What looks like glass plates are not glass plates at all. They are sheets of plastic with nothing attached to them—the relockers are NOT attached to the sheets of plastic. The purpose for the plastic beats the spit out of me. If anyone reading these words knows the purpose of the plastic, please contact me in care of this magazine.



10. The 4-way boltwork is retracted. Pretty impressive, huh?

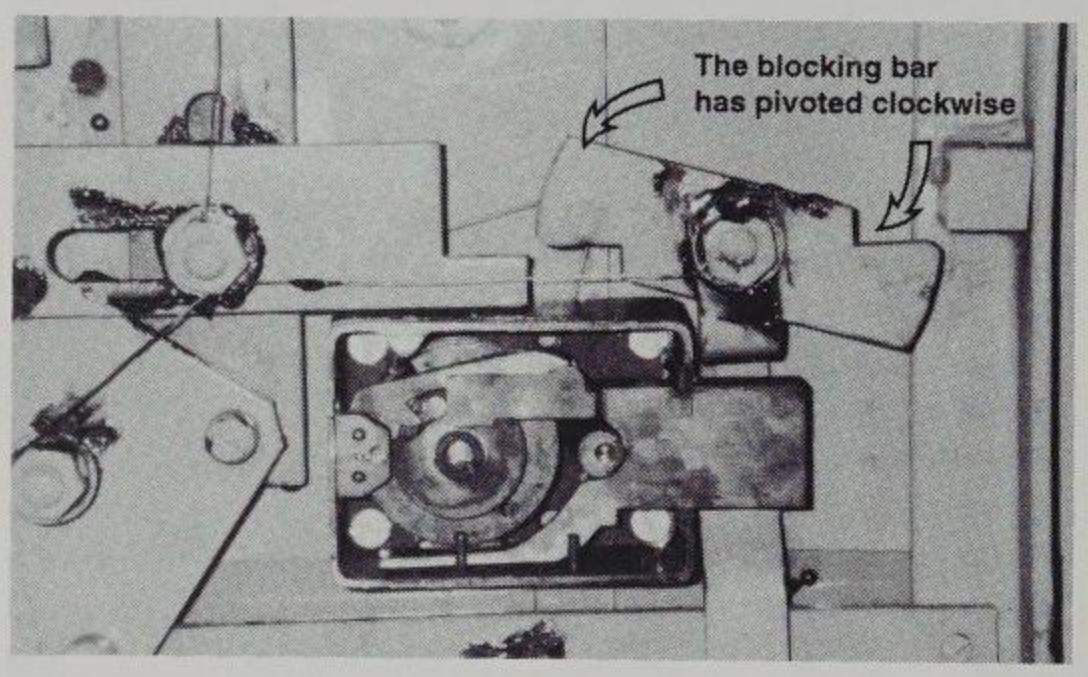
Terrence is still busy, so let's zoom in for a look at the combination lock. In photograph 11 we have a close-up of the Chubb comb-lock with the back cover still attached. Notice that there is no hole for a change key. This is a key-change lock, but you have to remove the back cover to gain access to the change-hole. So forget about side or top drilling to scope the wheels through the change-hole. The lock is in the lockbolt-extended, or locked position. You cannot see it in this picture, but the lockbolt is connected (via a peg in a slot) to a rod that controls the blocking bar



11. A close-up of the combination lock. Boltwork is extended and the lock is locked. Notice there is no hole for a change key.

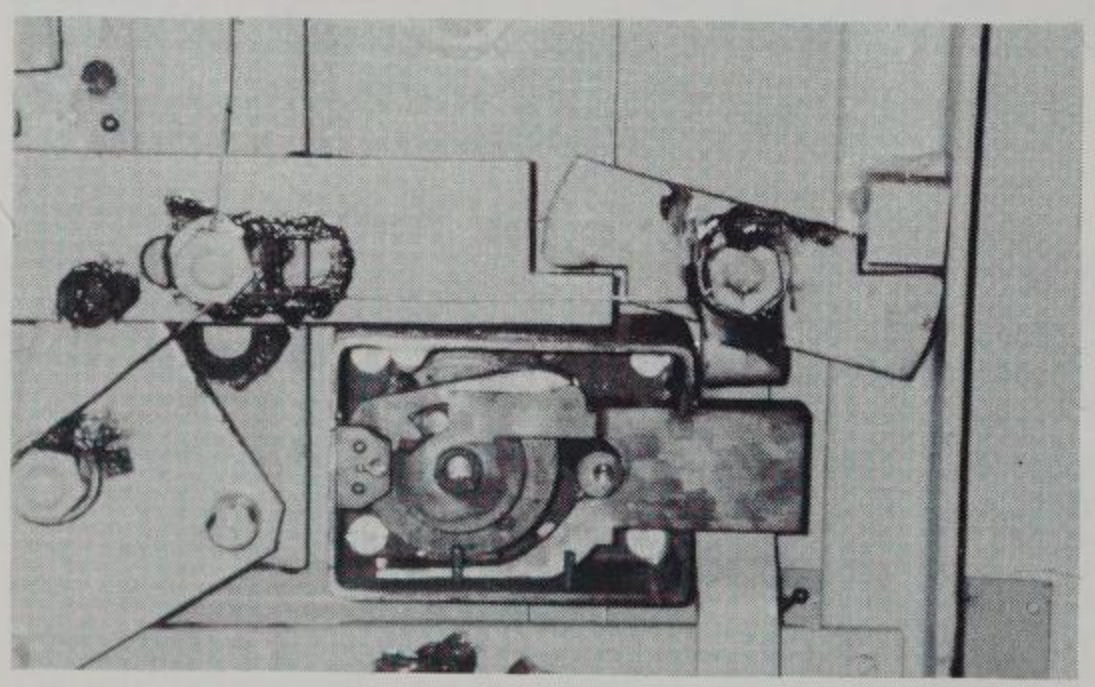
that the arrow is pointing to. In this photo, the blocking bar prevents the boltwork from retracting, not in one place, but two—front and back.

In photograph 12 I have removed the back cover of the combination lock. There are four 2-7/16" diameter wheels. The hole for the change key is at the left side of the lock. The lock is in the retracted position, but the boltwork is still extended. Notice how the blocking bar has pivoted clockwise. In the preceding photograph, this bar was blocking the boltwork in two places; now it has pivoted and no longer blocks anything.



12. The back cover of the lock is removed. The boltwork is still extended, but the lock has been opened. Notice that the blocking bar has pivoted.

In photograph 13 the handle has been rotated, retracting the boltwork. Notice how nicely the parts that were previously being blocked now fit into the cut-outs in the blocking bar.

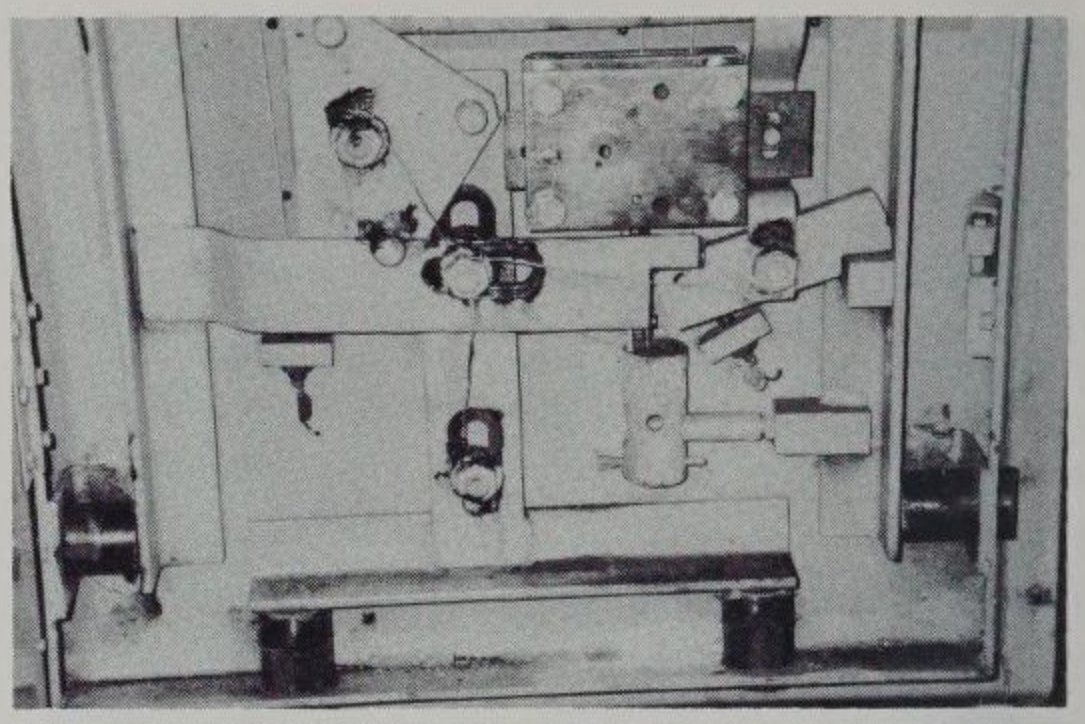


13. The boltwork is retracted. Notice the hole for the change key is now visible at the left side inside the lockcase.

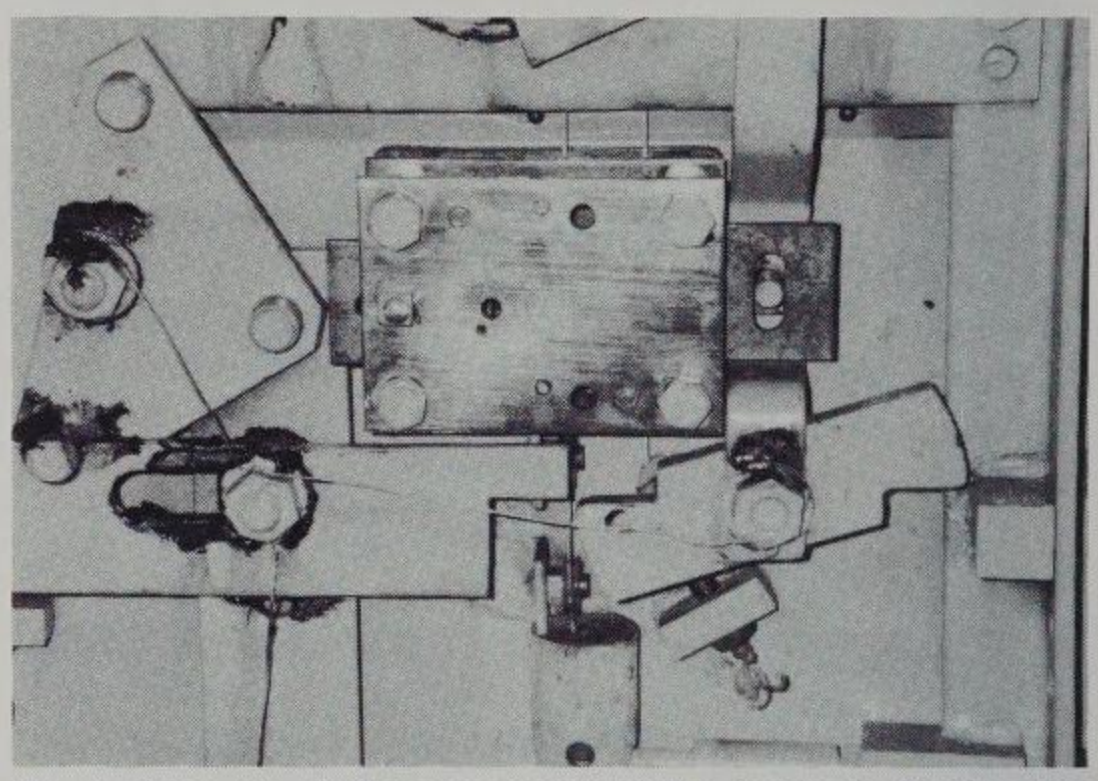
Photograph 14 takes us down to the lower half of the door, and the keylock. In this photo, the boltwork is in the retracted position—you can tell by the position of the keylock-controlled blocking bar below and to the right of the lock.

In photograph 15 we move in for a close-up of the keylock. The boltwork is in the extended position, but the keylock is still unlocked. Notice the relocker wires running under the keylock. These wires are actually high-strength plastic (Terylene) which is similar to, but stronger than, nylon. You know, the only thing I can think of that those sheets of plastic might do, is catch fire easily, which would tend to melt the relocker wires. Hmmm.

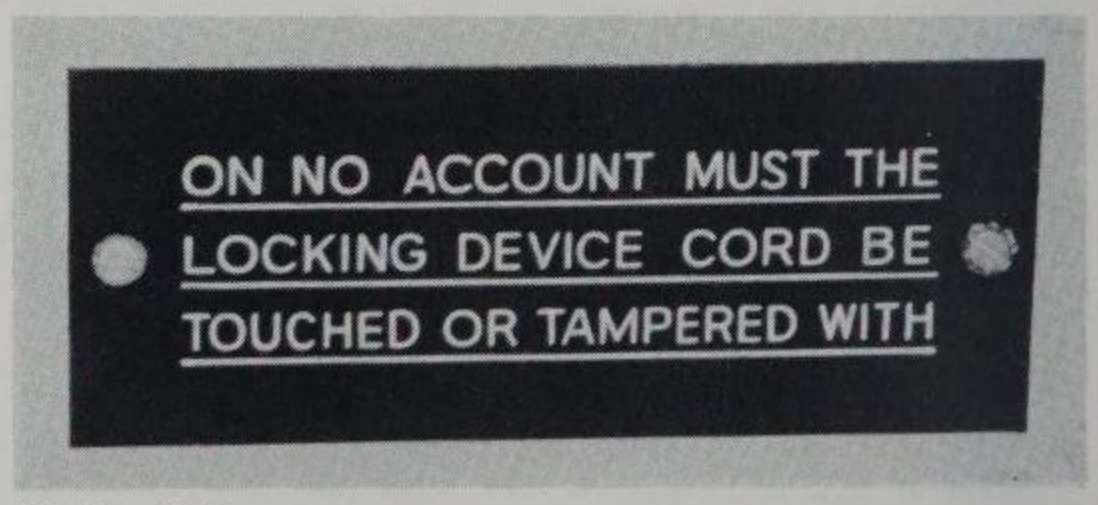
Photograph 16 shows a label on the inside of the back



14. the lower half of the door, home of the keylock. The boltwork is retracted.



15. A close-up of the area around the keylock. Notice the relocker cord running under the keylock, not once, but *twice.* Note: The other wire that you see has nothing to do with relockers. This wire is for preventative maintenance: all the nuts that are attached to moving parts are "wired" together to prevent them from accidentally unscrewing.



16. Yes Sir!

panel, telling us "ON NO ACCOUNT MUST THE LOCKING DEVICE CORD BE TOUCHED OR TAMPERED WITH." *Yes, sir*!

I have not drilled a first strength TDR, so I cannot guarantee that this will work, but I see no reason we cannot drill straight through the door for the fence of the combination lock and the stump of the keylock. The drill points are as follows:

COMB-LOCK FENCE: 99 x 1-1/4"
KEYLOCK STUMP: 1-1/4" LC

One thing that concerns me is the proximity of the keylock drill point to one of the relocker wires that runs under the keylock. Oh well, life and safecracking are full of risks.

Speaking of risks, Terrence is finally done. "Waddya say we get the 'H' outa here, huh Terrence?"

"Yeah, I'm through. Let's button this thing up and beat feet." We closed the back panel and heard the hooks click into the lockbolt extensions of the keylocks. We didn't bother to repair the holes we had drilled. That's the beauty of being a spy—no repairs! I swung the Chubby little door locked, turned the handle to extend the boltwork, and spun the dial. HAR! If they don't have the combination, they won't even find out anyone has been here until they have somebody drill open the safe—HAR HAR!

Just as I was feeling positively diabolical, a siren went off, and a voice barked over the loudspeakers "INTRUDERS IN 2-A, ALL SECURITY PERSONNEL RESPOND AT ONCE."

"Let's go, *now!*" Terrence hollered.

He didn't have to say it twice. I was up and over the wall in two seconds flat, with Terrence right on my heels. We scaled down the face of the fortress and hit the ground running. We were about twenty yards from the tunnel when a huge leopard rounded the corner of the fortress. This was going to be close. Terrence is faster than me, and he won the race to the tunnel by about five strides. I turned to locate the leopard just as he (she?) left the ground, jaws wide open, fangs aiming right for my gulping Adam's apple. Oh boy, had I cracked my last safe? Was I destined to be leopard lunch?

I had one chance: fill that foaming mouth with something other than Delicious Dave. I reached into the duffel bag, grabbed the first thing my fingers found, and hurled it with everything I had. My Little League coach would have been proud— I hit the bulls eye. The auto-manipulator sailed right through the feline's fangs and lodged in its throat. The big cat crashed to the ground at my feet, thrashing and choking. I didn't take a second look, because out of the corner of my eye I saw a half dozen or so guards at the base of the fortress, all lining up my mug in their crosshairs. I made the tunnel with bullets whizzing by in every direction.

When I got about thirty yards from the other end, I saw daylight—Terrence had hit the green button on the control panel and the trap door was sliding open. Oh what a beautiful sight! We ran up the stairs and out into the underbrush. In what seemed like an eternity, but in reality must only have been a few seconds, we were through the hole in the barbed wire fence, on our mopeds and heading for the hotel. We had made it.

EPILOGUE: I never found out what the real purpose of the mission was. Terrence never told me what the documents were, but I never told him that the locks were already open when we got there. Seems like a fair trade to me—tit for tat or something like that.

In government espionage circles, stories of my safecracking prowess went wild. Suddenly, it was commonly believed that I could manipulate *any* lock, including all Group 1 mechanical locks. Shortly thereafter, work began on a prototype we now know as the Mas-Hamilton X0-7. All because of me. Just another episode in the life of a super-spy. See ya next month. §

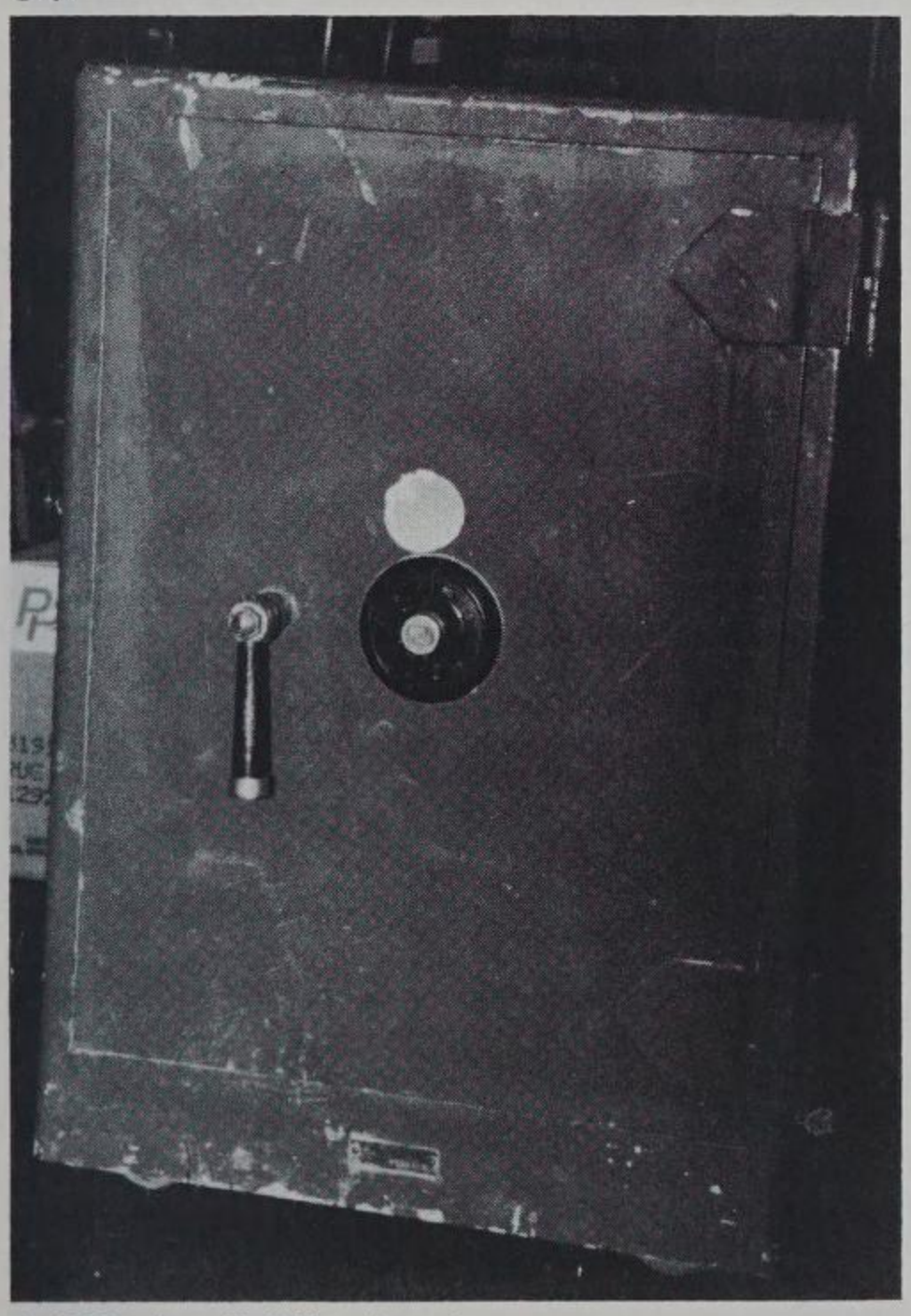
I'll never forget that one. Now, every time we take the kids to the zoo, I skip the leopards.

Opening An HHM

by Dave McOmie

"We prepared to go for the relocker...but before we do, let's look at some of the safe's features."

I was down at Argen's Safe & Lock in Seattle the other day, when my good bud Don Spenard called me back to look at a "fun one." The "fun one" was the Herring-Hall-Marvin shown in photograph one. It was locked and exhibited the classic symptoms of a fired relocker: The lockbolt was obviously retracting (the last turn was to the left, and the dial stopped at 16, which is perfectly normal for the HHM lock used in this safe), but the handle would not rotate. So we prepared to go for the relocker...but before we do, let's look at some of the trademark HHM features on this little guy.

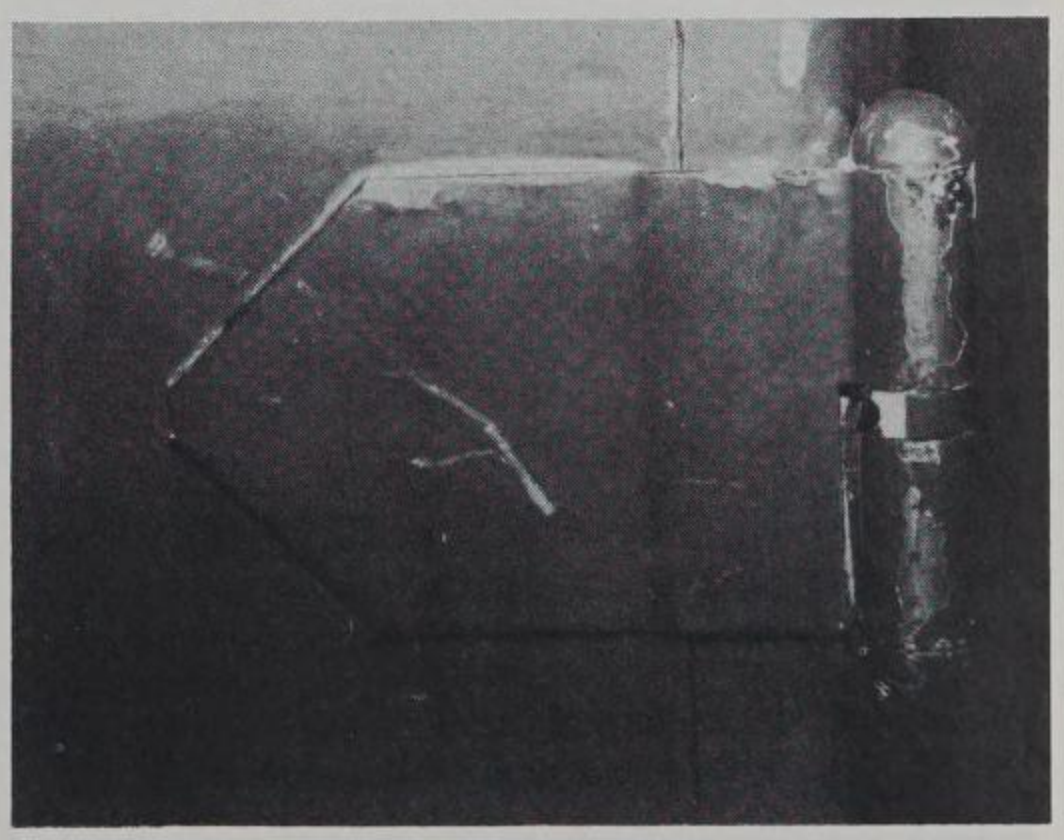


1. A Herring-Hall-Marvin safe.

Photograph two shows the distinctive HHM L-handle. If you see this handle you know you have a Herring-Hall-Marvin, but you cannot tell which model from the handle, since this handle was used on many different models (including some of the old-timers with HE locks!).

Photograph three is a great shot of the arrow-shaped

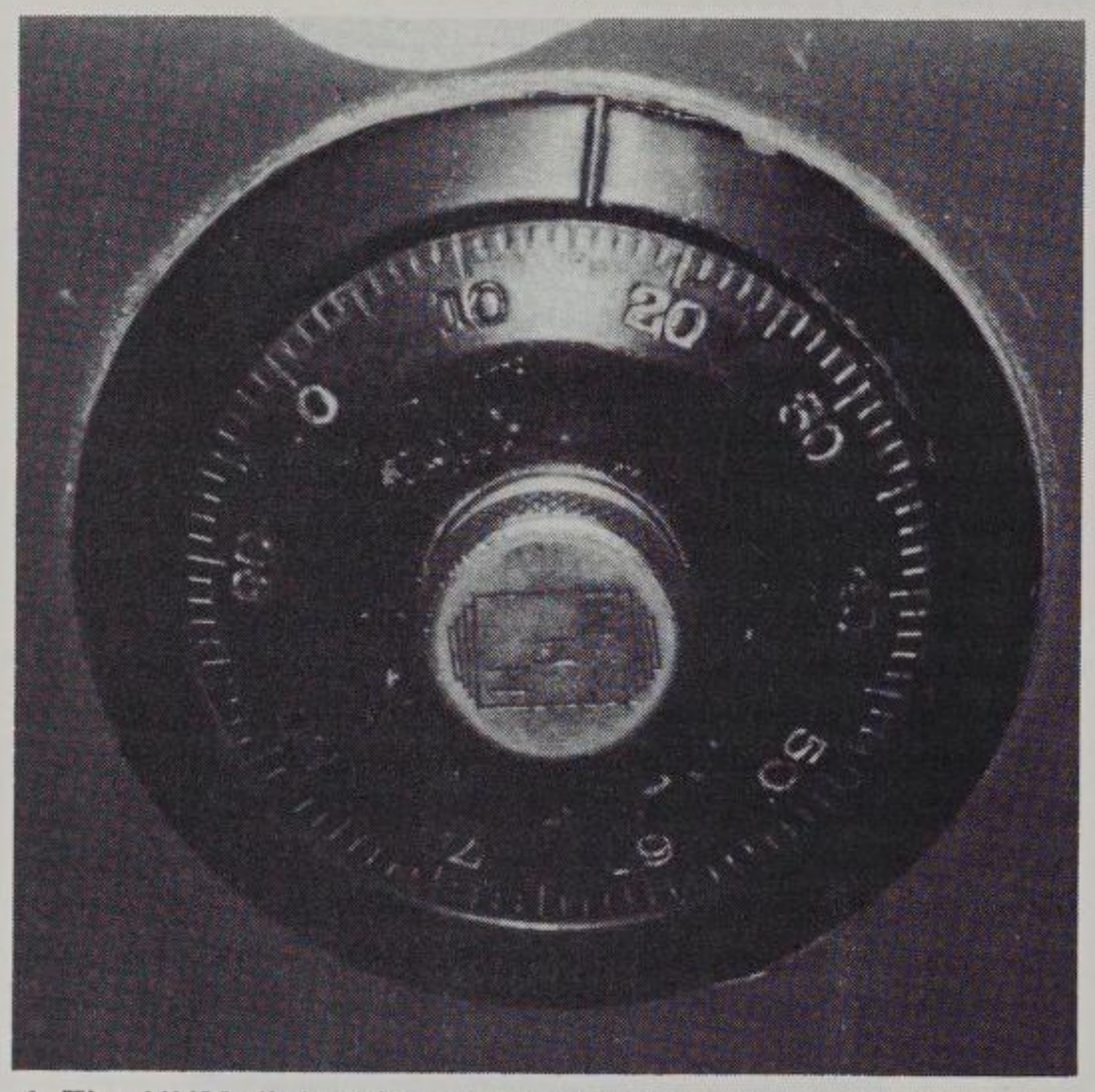
2. The distinctive HHM L-handle.



3. The HHM arrow-shaped hinge strap.

hinge strap that distinguishes this from other model HHM fire safes. This model uses horizontal locking bolts with vertical boltbars to connect them, and is vulnerable to a hardplate-bypass opening technique that we will cover later in the article. Using the arrow-shaped hinge is the very best, most reliable way to identify this model.

Photograph four is of the give-away dial. HHM used this dial on various safes, but when you see it on a fire safe, it tells



4. The HHM dial which clues you in as to the lock used.

you exactly which lock is on the inside, as we shall soon see. On the dial knob it says "HHM."

So there we have the clues. The handle tells us for sure that this is an HHM. The hinge tells us that this is the model with horizontal bolts and a vertical boltbar that connects them. (There is a rare exception to this; you can find it in *Safe Opening Vol. 2*, pg. 81.) And the HHM dial tells us that it has the HHM lock that looks like a Yale OC-5.

5. Don using a flexible scope to look through the safe bottom.

Don and I talked it over. He had just gotten a flexible scope from Ray Talton, and was itching to try it out. So he popped a hole in the *safe* bottom, sat on *his* bottom, and had a peek around. (*See photograph 5.*)

It turned out to be too difficult to make anything out clearly enough to tell what was going on inside the safe. And being the nice guy that I am, I didn't want to one-up Don by going out and getting *my* flexible (which, since it cost more, *must* be better), so we went to Plan B (which was originally Plan A).

Drilling for the relocker on a HHM fire safe (or fire vault) is an experience everyone should have. There are many different methods that work. You can drill for the post the relocker sits on and punch it off the door. You can drill for the cross locking pin that deadlocks the relocker in the fired position. (Yes, HHM was light years ahead of today's so-called high-security safe manufacturers who speak of cross locks as if they are something new). Don's favorite method is to go for the cross locking pin, but I wanted to try something different. You know how it is, steak is great, but not every night. Similarly, going for the relocker on an HHM is great, but not the same way every time. So we loosened up the nut on the handle which allowed us to rotate it far enough to drill a hole at exactly 1-1/4" right of handle center, 3-1/8" down. (*See photograph 6.*) Through the outer skin, through several inches of insulating material, and STOP. I peeked in. We were right where we wanted to be: on the vertical bar, just below the relocker. We tightened the nut on the handle so we could put a little pressure on it (we had loosened it earlier so we could rotate the handle out of our way). Next, a punch was inserted into the hole, and I lightly tapped on it while Don

6. Drilling a hole in the safe door.

held a little pressure on the handle. Nothing happened. I tapped a little harder. Still nothing. Finally I let off a few BOOMS and the handle jumped to the open position. (I know you are wondering just what exactly happened; we will cover that shortly).

We swung the door open. Photograph seven is of the old SMNA label on the back panel of the safe.

Photograph eight shows us the inside of the door with the back panel removed. The lock is locked and the bolts are in the extended position. Notice that this safe has only horizontal bolts, two on the opening side and two on the hinge side. There are two vertical boltbars. The bar closest to the lock connects the upper and lower bolts on the hinge side; the vertical bar over to the right edge of the door connects the upper and lower bolts on the opening side.

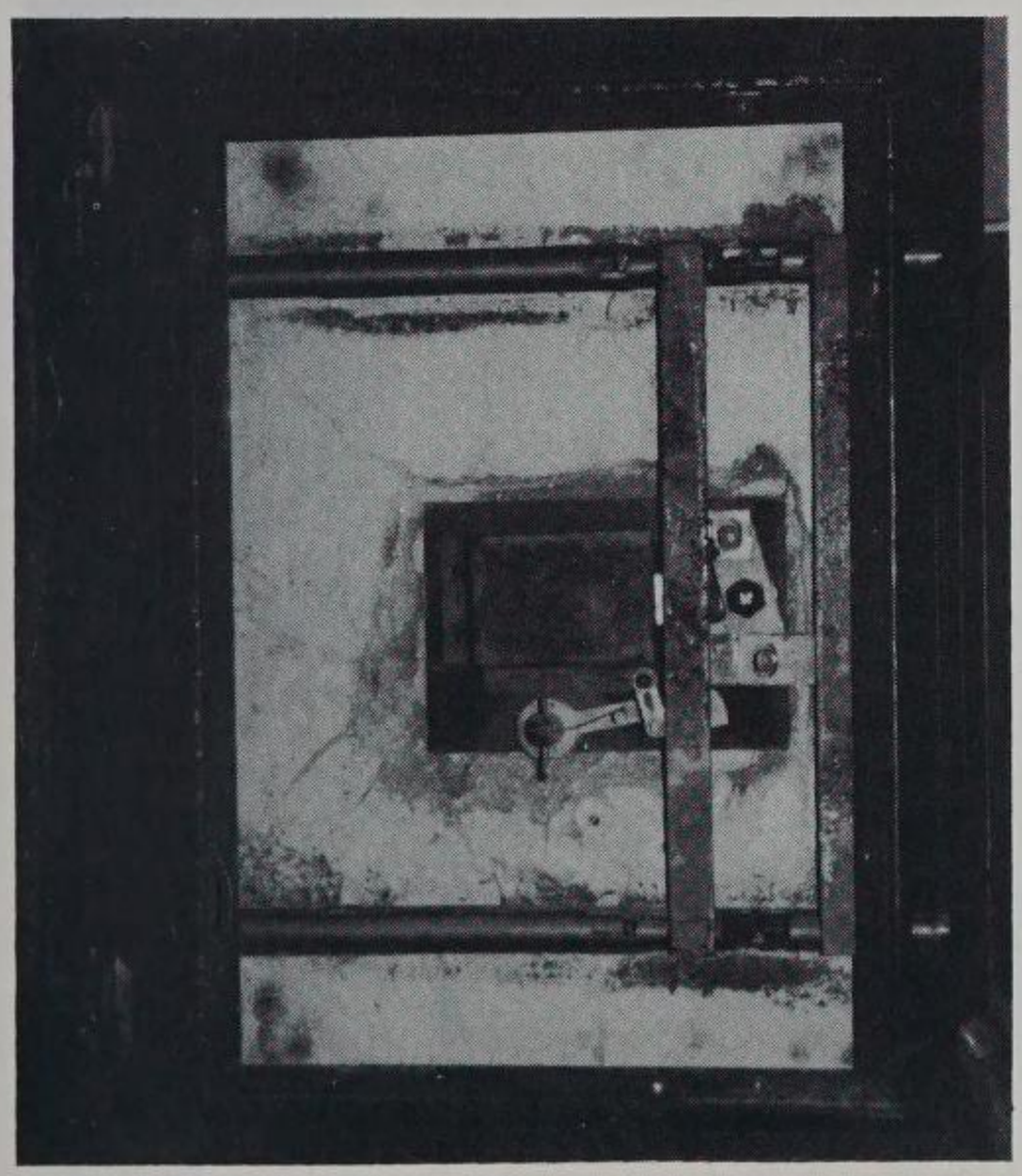
7. The old SMNA label found on the back panel of the safe.

Photograph nine gives us a nice close-up around the lock. There is a large plate over the back of the lock. This plate serves as a hold-up (detent) for the thermal link that is holding the relocker up. If a burglar punches the lock, the link falls away and the relocker fires. If a burglar torches the safe, the thermal link melts and the relocker fires. The relocker works by dropping over a little peg on the vertical boltbar, which prevents the boltbar from retracting (more on this later).

I would like to point out a very effective technique for opening this model HHM fire safe, a technique that allows us to bypass the hardplate! To open a functioning, non-relocked HHM that has arrow-shaped hinge straps, proceed as follows:

(1) Measure, mark and center punch at 3" LC, 2-1/2" up. We are aiming for the vertical boltbar just above the hardplate. (*See the 'X' in photograph nine—that is our target.*)

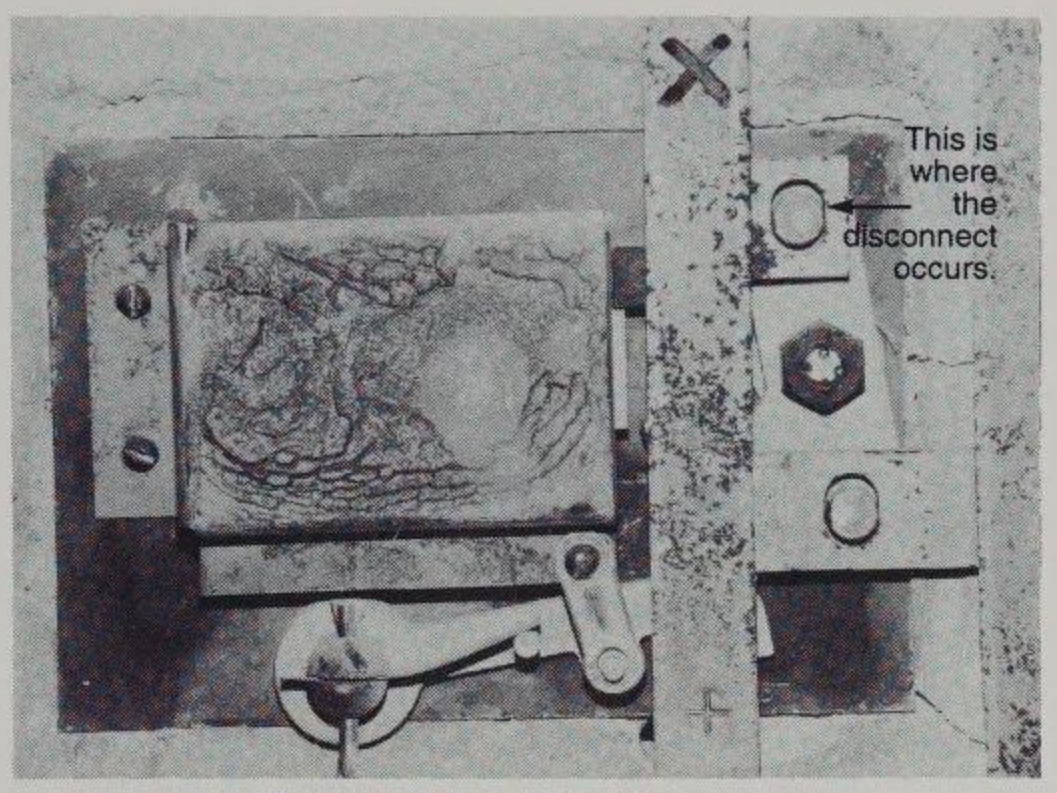
(2) Using a high-speed bit and low to medium speed (5001500 rpm) drill a hole through the outer skin and through the insulation. Do NOT drill through the vertical boltbar. Verify that it is the boltbar by shaking the



8. The inside of the door with the back panel removed.

handle—the boltbar will have a little movement to it.

(3) Insert a punch into the hole. While applying counterclockwise pressure on the handle, punch the vertical boltbar until the handle jumps. You have disconnected the



9. Close-up of the area around the lock.

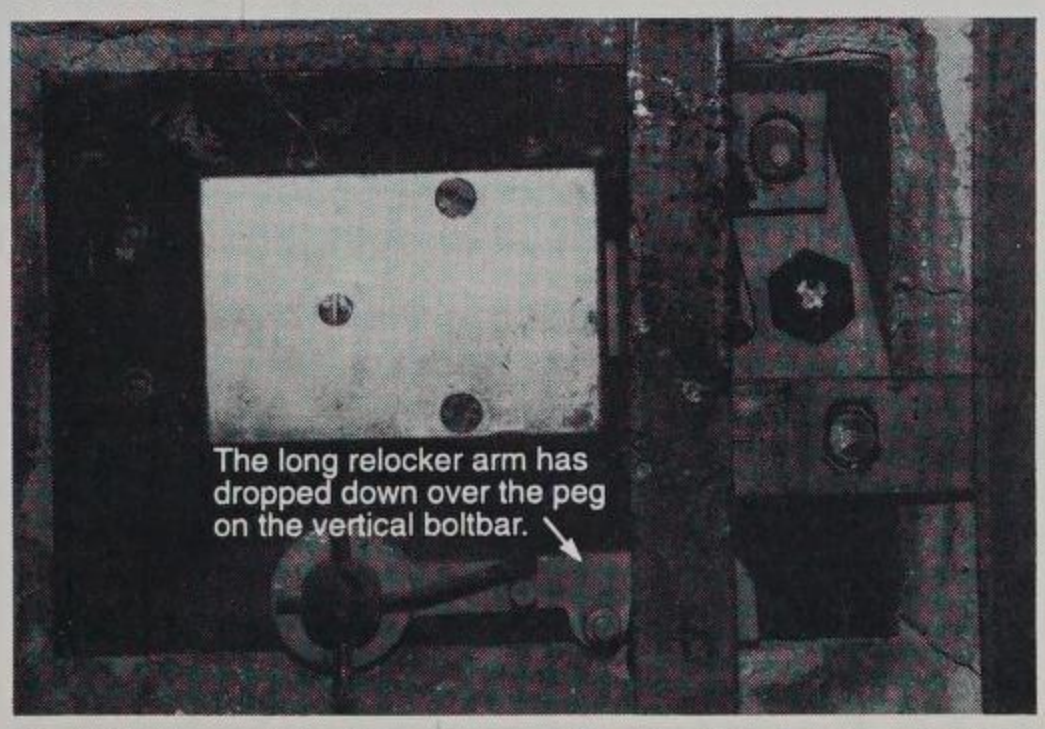
vertical bar that controls the door bolts on the hinge side from the tit on the handle cam. (*See arrow in photograph 9*).

(4) With the vertical boltbar disconnected from the handle cam, you can now use a screwdriver (or any other pry tool that will fit into the drilled hole) to pry the vertical boltbar *toward the opening side.* Remember, this is the boltbar that controls the door bolts on the hinge side, so to retract them you need to pry the boltbar toward the opening side.

(5) The door bolts on the hinge side are now retracted. The next step is to remove the hinge pins. These can be a bit of a pain to remove, but they must come out to complete the opening.

(6) Once the hinge pins are out, the door is shoe-horned open from the hinge side. In other words, since the door bolts on the hinge side are retracted, whereas the door bolts on the opening side are still extended, we need to open the door and shoe-horn it out from the hinge side. That's it—Cool, huh!?!

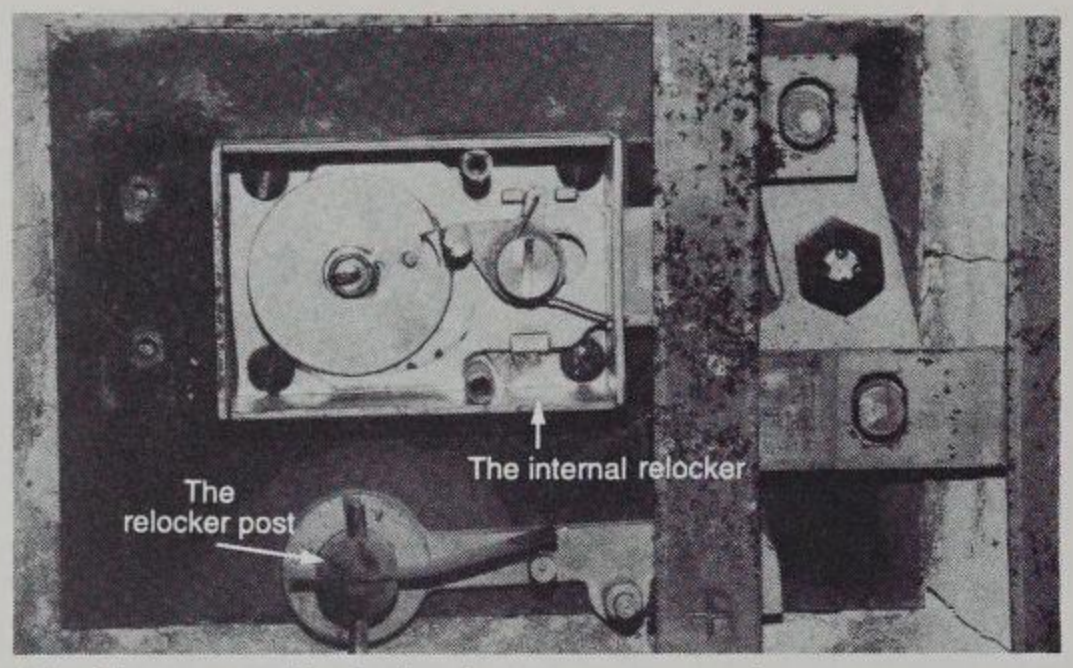
In photograph 10, the metal plate (relock detent) has been removed, giving us a view of the lock with its back cover on. When the plate was removed, the thermal link was also removed, which caused the relocker to fire (*see arrow*).



10. With the metal plate removed, the lock/back cover is visible.

I should warn those of you who are unfamiliar with HHM relockers: during servicing, if you let the relocker fire, the cross locking pin inside the post will fire; and there is no way to reset it without taking the cotter pin out and disassembling the relocker. This can be frustrating, but everyone should do it at least once just to be able to say "yeah, I done that!"

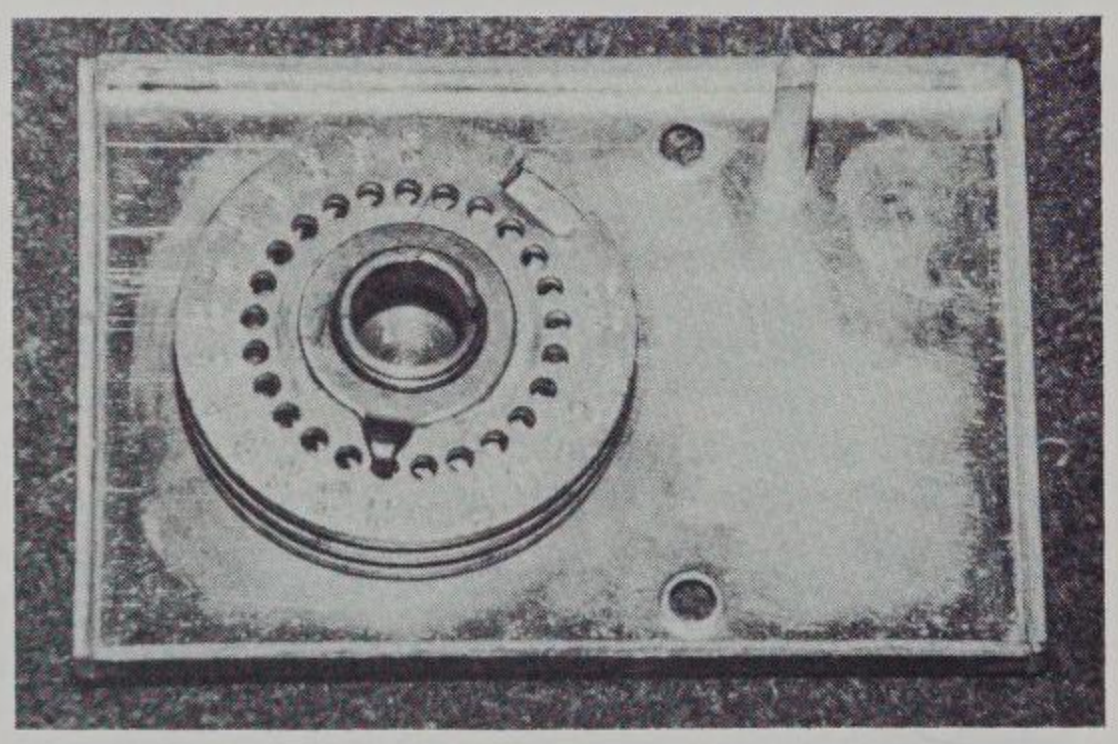
In photograph 11 we have a close-up of the lock with its back cover removed. You can see that it is similar to an OC-5



11. Close-up of lock, back cover removed.

without a gear under the fence. This lock uses a spring to keep the fence against the wheels/driver. One arrow is pointing to the post that the relocker rides on. This is the post that some people like to punch out to defeat the relocker. The other arrow is pointing to the internal relocker. This internal relocker is just a small piece of spring steel that pops up to block the lockbolt from retracting when the back cover is removed. It is held in check by a long post on the back cover.

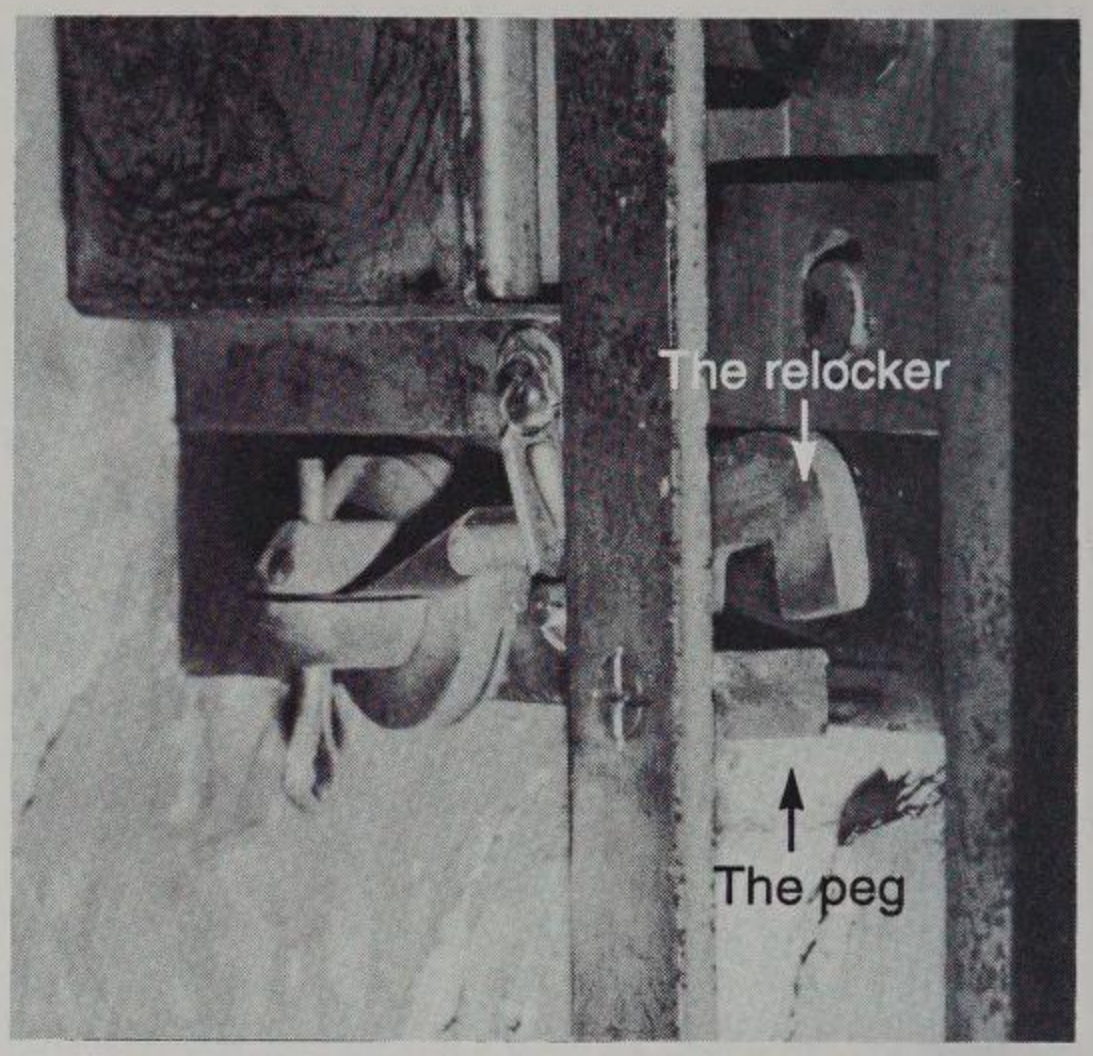
Photograph 12 shows us the back cover with its three wheels attached. Notice these are hole-change wheels. The arrow is pointing to the post (pin?, arm?, peg?—what is the best descriptive word for this part?) on the back cover that holds the internal relocker in check.



12. Back cover with 3 wheels attached. (Hole change wheels.)

Earlier I promised to show you what Don and I did that bypassed the relocker and opened the safe. Well, I am going to have break my promise. I cannot tell you, and the reason is because I don't know!!! You will recall that I punched on the vertical boltbar while Don held pressure on the handle, and *presto,* it opened. Well, we thought that we had pushed the vertical boltbar in far enough to bypass the relocker. But when we opened the safe, we were looking at the same thing you saw in photographs eight and nine—the relocker had not fired! So, Don and I were left scratching our heads trying to figure out what could possibly have been wrong with this safe that would have given the symptoms of a fired relocker, and also responded to a technique designed to overcome fired relockers. Geez, it has driven us nearly nuts, but we haven't a clue.

Nevertheless, I will show you the technique so you can have it in your own bag of tricks. Who knows, maybe you will have an HHM that really is relocked. In photograph 13 we have an angled shot that shows us the end of the relocker and



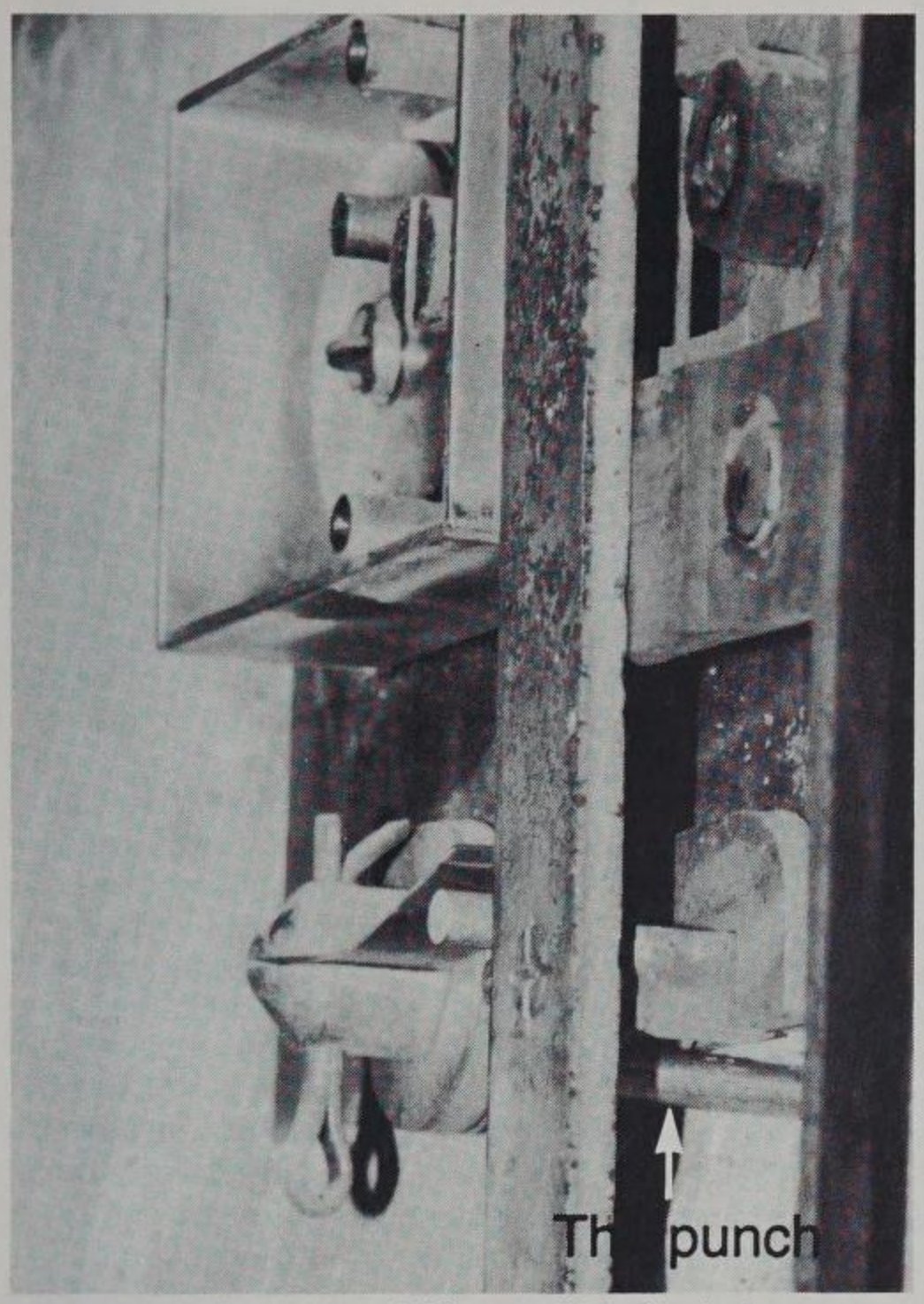
13. The end of the relocker and peg where relocker drops.

the peg on the vertical boltbar onto which the relocker will drop, if and when it fires (see arrows).

In photograph 14 the relocker has fired. The leaf spring on the relocker has caused it to pivot on the post, which caused the end of the relocker to drop down over the peg on the vertical boltbar. In this position, the boltbar cannot be retracted by the handle, because the relocker has trapped its movement.

14. In this photograph the relocker has fired.

Photograph 15 shows you what Don and I were trying to do. The arrow is pointing to the punch I have inserted into the hole. The punch is resting against the vertical boltbar. The idea is to punch the boltbar at the same time pressure is being held on the handle. As soon as the peg on the boltbar goes past the relocker, the handle will jump to the retracted position. A handy tip: it really helps to have someone putting pressure on the handle, because if you don't, then you



15. Arrow indicates punch I inserted into the hole.

actually have to bend the vertical boltbar in far enough for it to bypass the relocker. If you hold pressure on the handle, you will not have to bend the boltbar nearly as far. This is because when you punch the boltbar, it will bend way in for a microsecond, and then snap back into pretty much the same shape it was in before you punched it. But if someone holds pressure on the handle, you can capitalize on that split-second when the boltbar is back far enough, before is snaps back into shape.

One last question: In the case of a functioning safe with a lost combination, when should we use the hardplate bypass technique, and when should we drill into the lock? Here is my simple little rule:

(1) If the safe has the HHM dial shown back in photograph four, use the bypass technique. Why? Because the steel dial is not removable (without ruining it), and the HHM lock shown in photograph 11 is a bit of a pain to drill into and defeat without doing irreparable damage to it.

(2) If the safe has a Sargent & Greenleaf dial, then it has a Sargent & Greenleaf lock on the inside, so pull the dial with a Lockmaster's dial puller, and drill at 97 x 7/8". (You do, of course, have the option of using technique 1 on this safe too.)

Keep in mind that option (1) allows you to bypass the hardplate, whereas option (2) requires you to drill through the hardplate. Also, option (1) makes the repair a little more difficult, in that the hole is outside the dial ring, whereas option (2) yields a simple repair, since the hole is under the dial ring.

Well guys, that about wraps up our tour of the HHM fire safe. They really are fun to play with. Have some fun on the next one you have to open! See ya next month. §

If you make proper identification, HHM fire safes are great fun to open. We can use opening techniques that are unique to HHM, but we must first make proper ID.

by Dave McOmie

Bungling For Bucks

"The dial had been broken off, the hinge was broken, the safe was a mess, the customer was a mess. Please come NOW!"

Bunglars never seem to learn that knocking the dial off a safe makes the job *more* difficult. But who are we to complain. After all, our number one criterion for pricing an opening is the difficulty of the job, right? So, if we have the ability to tell which jobs are more difficult, then our quotes will always be right on the money, right? On the other hand, sometimes a job that looks difficult can turn out to be easier than we thought, in which case we charge less than we quoted, right? Geez McOmie, pull your head out of the sand and enter reality!

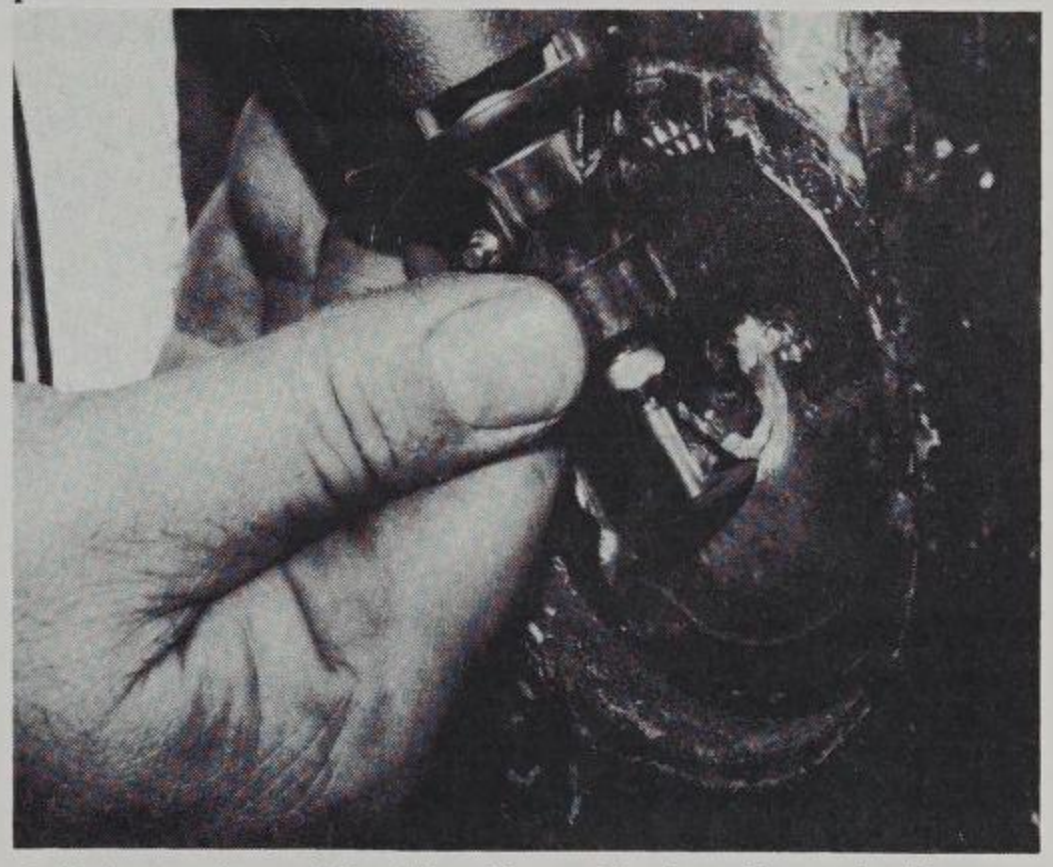
It was a Saturday in reality. Me and my good buddy, Don Spenard, were all set to chow down on some of Seattle's finest smoked salmon when the phone rang. A lockout. A bunglar had spent a good portion of Friday night trying to beat, pry and muscle open a "small, square, safe". The dial had been broken off, the hinge was broken, the safe was a mess, the customer was a mess, would we please come open it...NOW?!?

So we decided to postpone the smoked salmon for a couple of hours, and go be good Samaritans (for a small fee, of course). Entering the office, we took our first look at the damage—a hinged Herring-Hall-Marvin round door beat to a pulp. (*See photograph 1.*) These doors use a removable #70 dial, but the bunglar didn't know that. So he used a sledgehammer to remove the dial, rather than take out the screw. What a moron.

1. A damaged Herring-Hall-Marvin safe.

The customer had the combination, so our job was to get the spindle turning freely, reattach the dial, and dial it open. Sounds simple, right? Well, sometimes it is, and sometimes it ain't. In this case, the door had been pounded on so much that it was hard to distinguish the spindle from the face of the door—everything was pounded flush and looked the same.

ATTEMPT NUMBER ONE: Using a dremel tool. We thought a small grinding stone would eat away all the crud and free up the spindle. (*See photograph 2.*) It helped a little but still the spindle would not rotate freely. Notice the two holes in the spindle. The threaded hole in the center is for the screw that holds the dial on to the spindle. The other hole is for the guide pin on the dial.



2. Using a dremel tool to attempt to free the spindle.

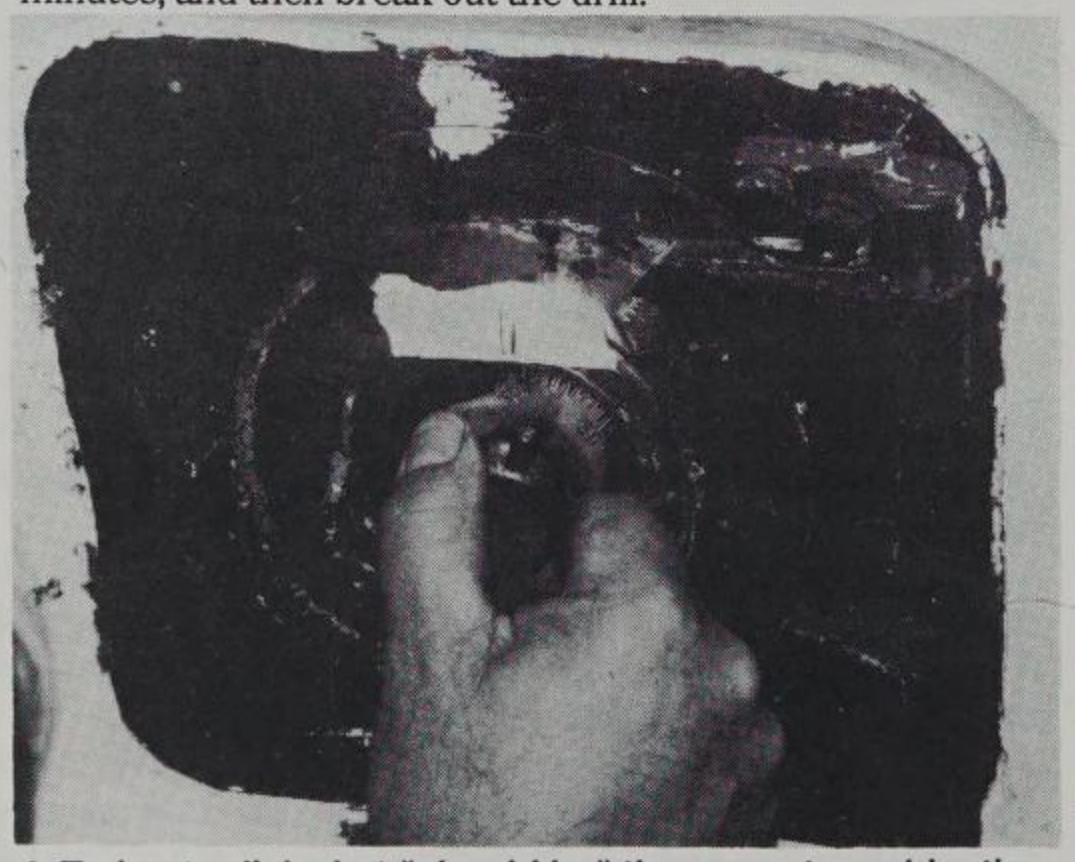
ATTEMPT NUMBER TWO: Using a hole saw. The dremel tool had cleaned up the outline of the spindle, so we thought a hole saw around the large punch-proof collar would help free up the spindle. It helped a little.

We ended up alternating both methods, and finally the spindle came free. We now reattached the dial. (*See photograph 3.*) Notice the guide pin (see arrow). This pin goes into one of the holes in the spindle. (Refer back to photograph two.)

Since the hinge had been broken into 69 pieces, we had no dial ring to use as a reference point. So we used old standby: masking tape and a pen! In photograph four we are dialing the combination the customer swore was correct. By gawd, he had dialed this safe open every day since Truman beat Dewey; therefore there could be no possible mistake about the combination. Yeah right. Don and I took turns adding and subtracting, feeling for contact points, wiggling, waggling, cussing (silently), oscillating, hammering, vibrating, swearing (under our breath), jiggling, jaggling, cursing (quietly), and then enough became enough. Former Marine Sergeant or no, this guy was not giving us the correct combination. Since I am more tactful and diplomatic than Don, I took it upon myself to approach the guy (who looks like Jack Palance on steroids)

3. To reattach the dial, insert guide pin in a spindle hole.

and gently explored the possibility of him double checking the combination. He glared at me, and exploded, swearing like a truck driver. I know my own combination!!! At this point, reason and persuasion seemed futile, and since Don is bigger than me, I let him take over. Well, maybe it was the camaraderie between two former Marines, or maybe Don just out-stared him. But old Jack Palance softened right up and made phone calls to two other people who had the combination. "Well, I'll be a son of a ..., he said, "we got three people with three different combinations." It was true, all three combinations were radically different! Don and I looked at each other in disbelief. When Palance left the room, we talked it over and agreed to work with all three combinations for 15 minutes, and then break out the drill.



4. Trying to dial what "should be" the correct combination.

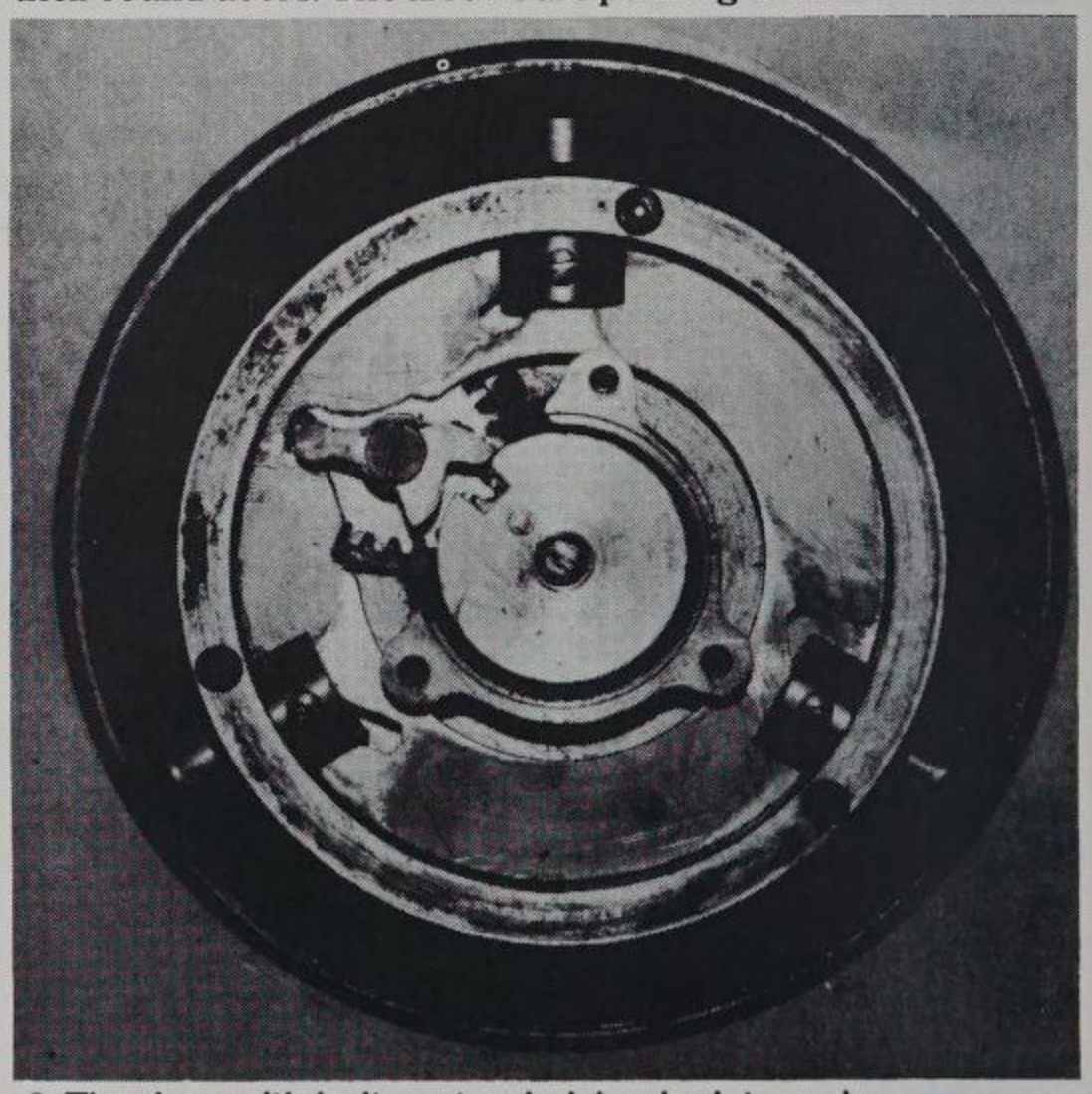
We alternated in shifts of 10 tries each. Don pounded the door with a shockless hammer while I dialed, and vice versa. Finally, bizarre as it sounds, we used one number from each combination, and the dial tightened up a little! Don hammered like mad and I rotated the dial to stop. She was open.

We removed the hinge bolts and laid the door down on a clean shop rag. (*See photograph 5.*) The back plate is on and the locking bolts are retracted. There is an Underwriter's Laboratories "RELOCKING DEVICE" label, and a manufacturer's sticker which tells us: "CAUTION: Never close door with this cover plate removed. Always open the bolt work after replacing this cover plate before you close door. Read lock instructions before changing combination." We can also see the three screws that hold the back plate of the door and

5. The door removed, back plate on, locking bolt retracted.

the back cover of the lock on. And last but not least, we can see the key change hole.

In photograph six I have extended the bolts and removed the back plate and back cover. There are three locking bolts, at 12:00, 4:00, and 8:00, each with its own relocking pin. These relockers work very much like the relockers AMSEC uses in their round doors. The arrows are pointing to the relockers.

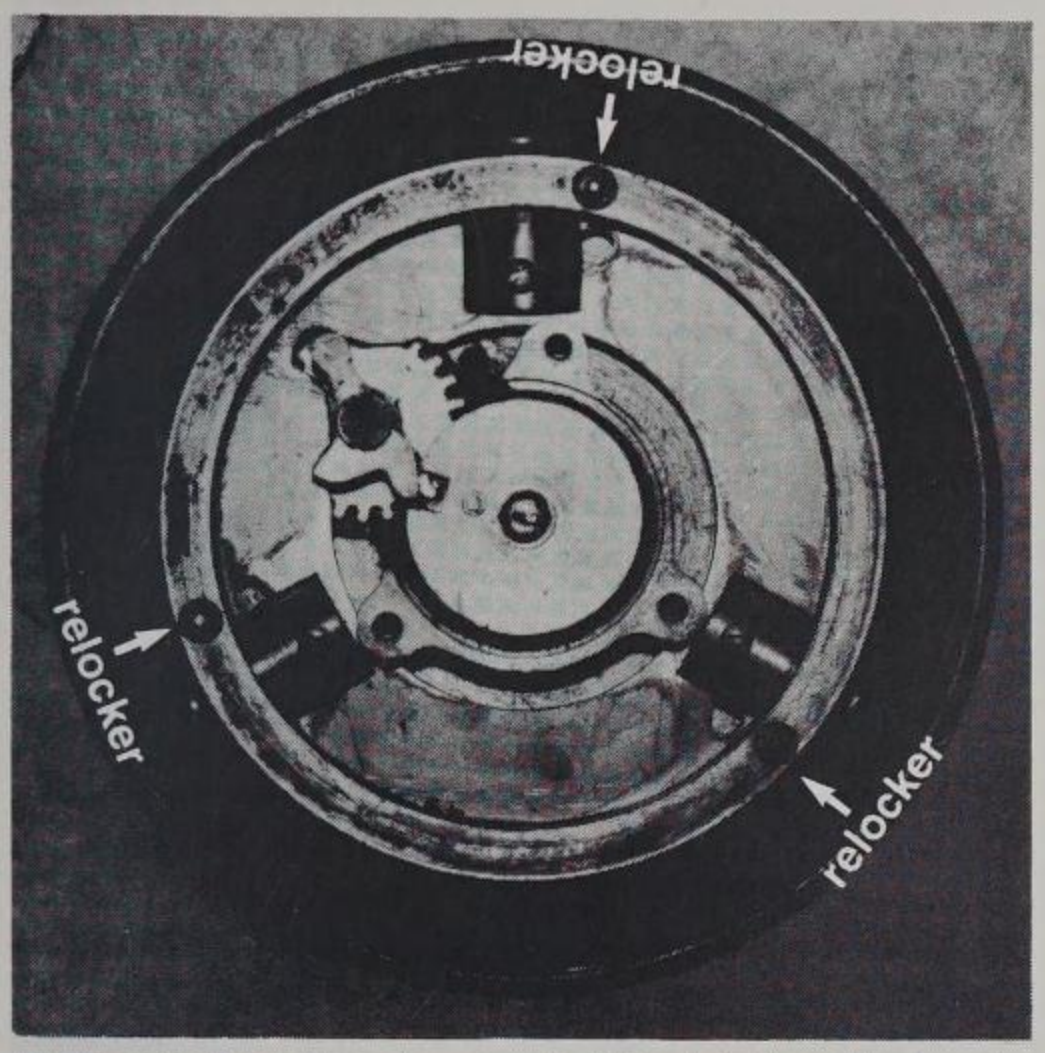


6. The door with bolts extended, back plate and cover removed.

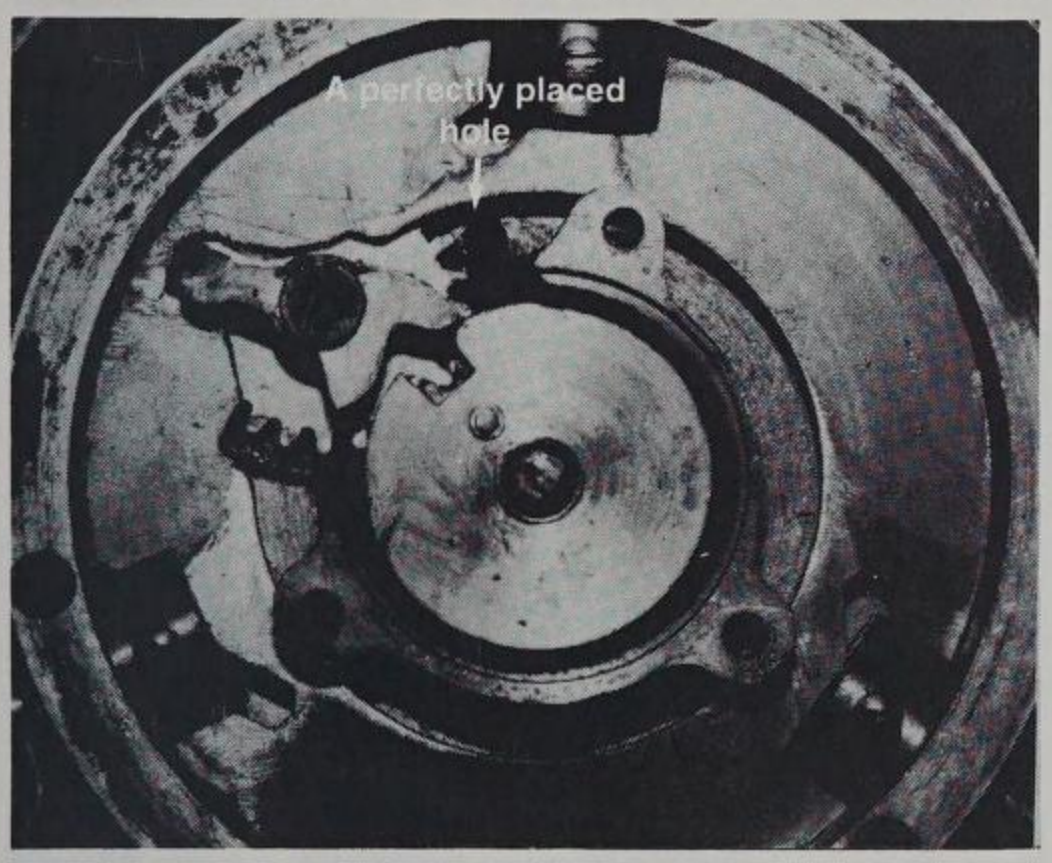
In photograph seven I have depressed the relocking pins, rotated the dial to the right and retracted the locking bolts.

Photograph eight is a close-up of the lock. Look closely just above the fence and you will see a hole. This safe has been drilled before, and the hole could not have been placed any more perfect, not even if I had drilled it. It was probably Don's dad, who has been opening safes in Seattle for over 50 years, and is still going strong!

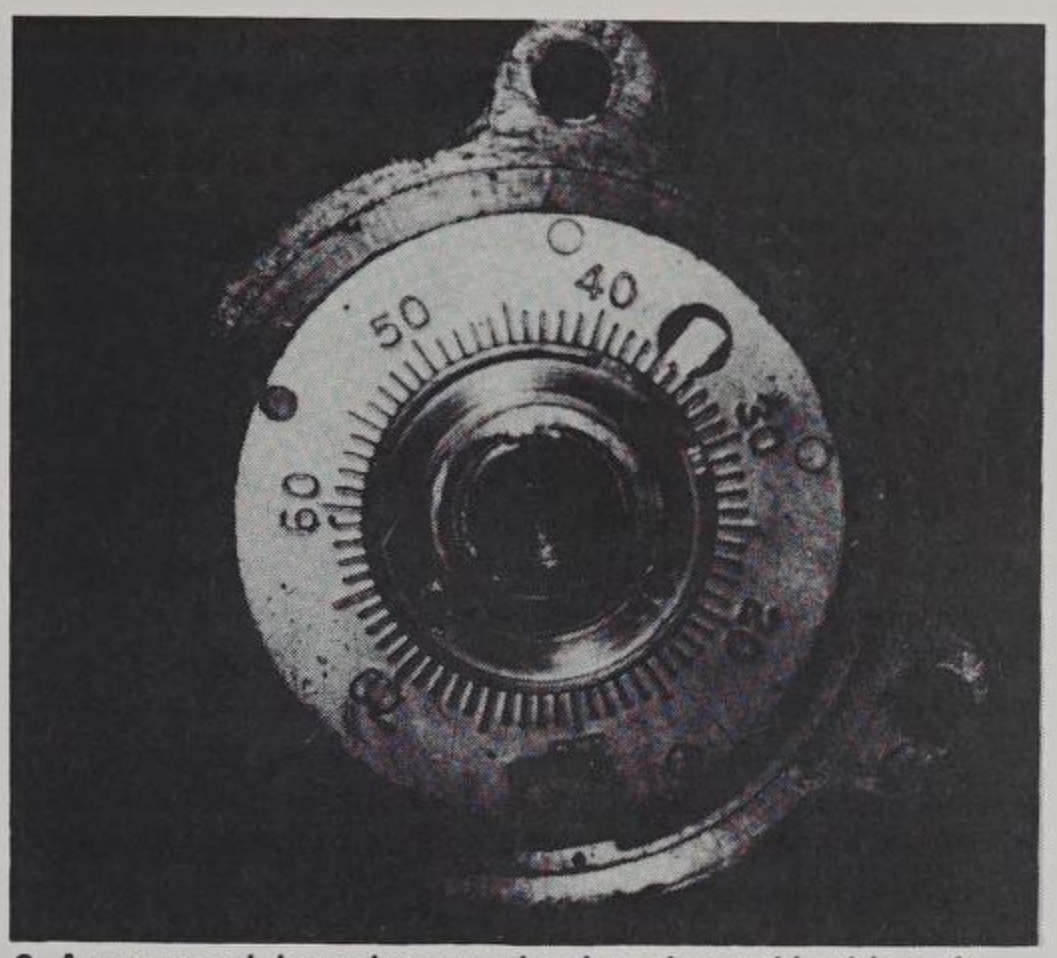
Photograph nine shows us the key-change wheel pack that was inside this safe. These are unusual key-change wheels, in



7. The relocking pins depressed, dial rotated, and bolts retracted.



8. Close-up of the lock. Note hole just above the fence.



9. An unusual key-change wheel pack used in this safe.

that they have numbers on them just like hand-change wheels do. I have never figured out why.

One last point: These are pretty stout little doors, but I have to tell you an experience I had with one about 15 years ago. I was over at the now defunct Northwest Safe Company one afternoon, when a badly burglarized safe just like this one came in on the back of a truck. I was pondering the possible avenues of attack, when Lee Catchpole, owner of Northwest Safe, grabbed a sledgehammer and started whaling on the door. I couldn't believe my eyes. The biggest shock of all came about 15 whacks later when the door fell out onto the bed of the truck. I scurried up onto the truck with a screwdriver and took the door apart to see what had happened. Well, the cam plate that controls the locking bolts had disintegrated, and once two of the locking bolts had fallen out, the door was open. I'll never forget that. Lee had some other interesting tricks that I'll share with you as I remember them. Sometimes it takes a similar job to jar the old memory.

Anyway, Don and I collected for the job (cash, of course), and headed down to our favorite fish place. But with our newfound fortune we decided to forego the Seattle salmon and have Maine lobster. It was great. See ya next month. §

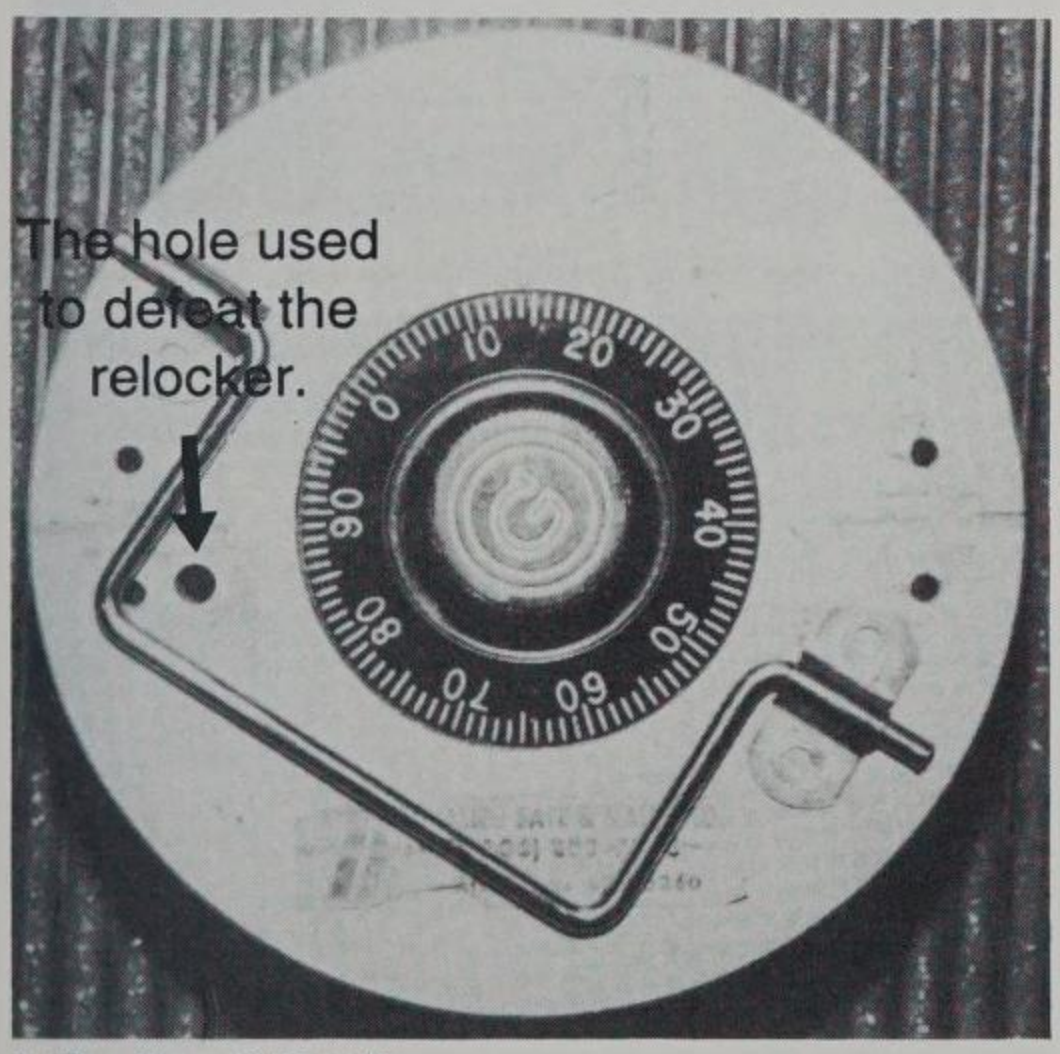
by Dave McOmie

1, 2, 3, Open!

"Mr. Spenard's opening was slick. (He must have copied me!)"

My good bud, Don Spenard, came over for coffee the other night and dropped off photographs of a couple of nice openings he did recently. So, I thought to share them with you this month.

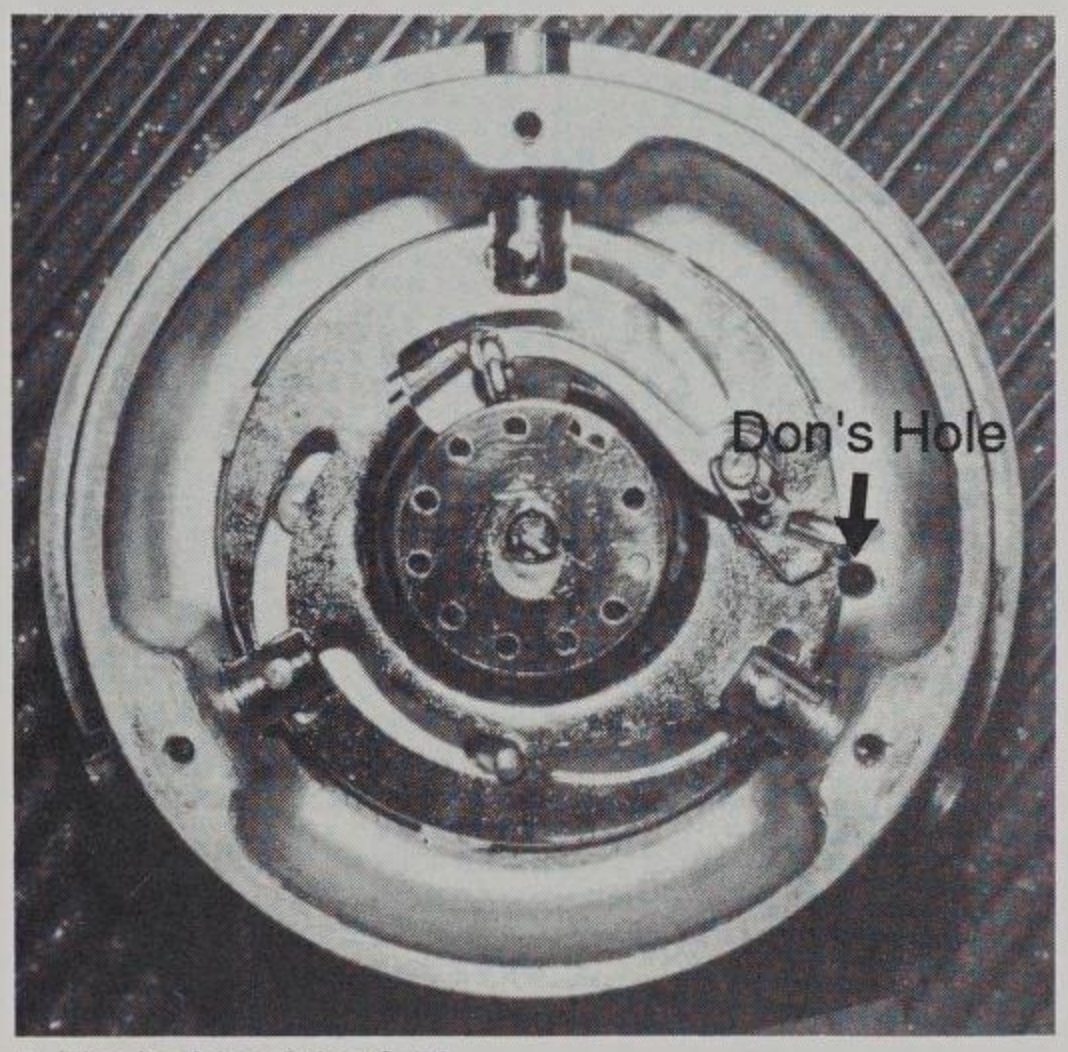
Photograph one is of a Gary C-50. The C-50 is a 6-1/2" lift-out round door, one of the most dependable little guys that Gary ever built. When Don arrived on the job, he could rotate the dial and feel the fence drop into the drive cam gate, but the dial would go no farther. The relocker had fired. So he removed the handle and drilled what was to be an "exploratory" hole under part of the left hand handle bracket. An exploratory hole is usually needed because these doors had randomized drill points. But Don's hole came out close enough to the relocker to hook it...so he did! The arrow is pointing to the hole that opened the safe. The other four holes are mounting screw holes for the handle. Before we see exactly what Don did, let's take a look at the door.



1. The Gary C-50 safe.

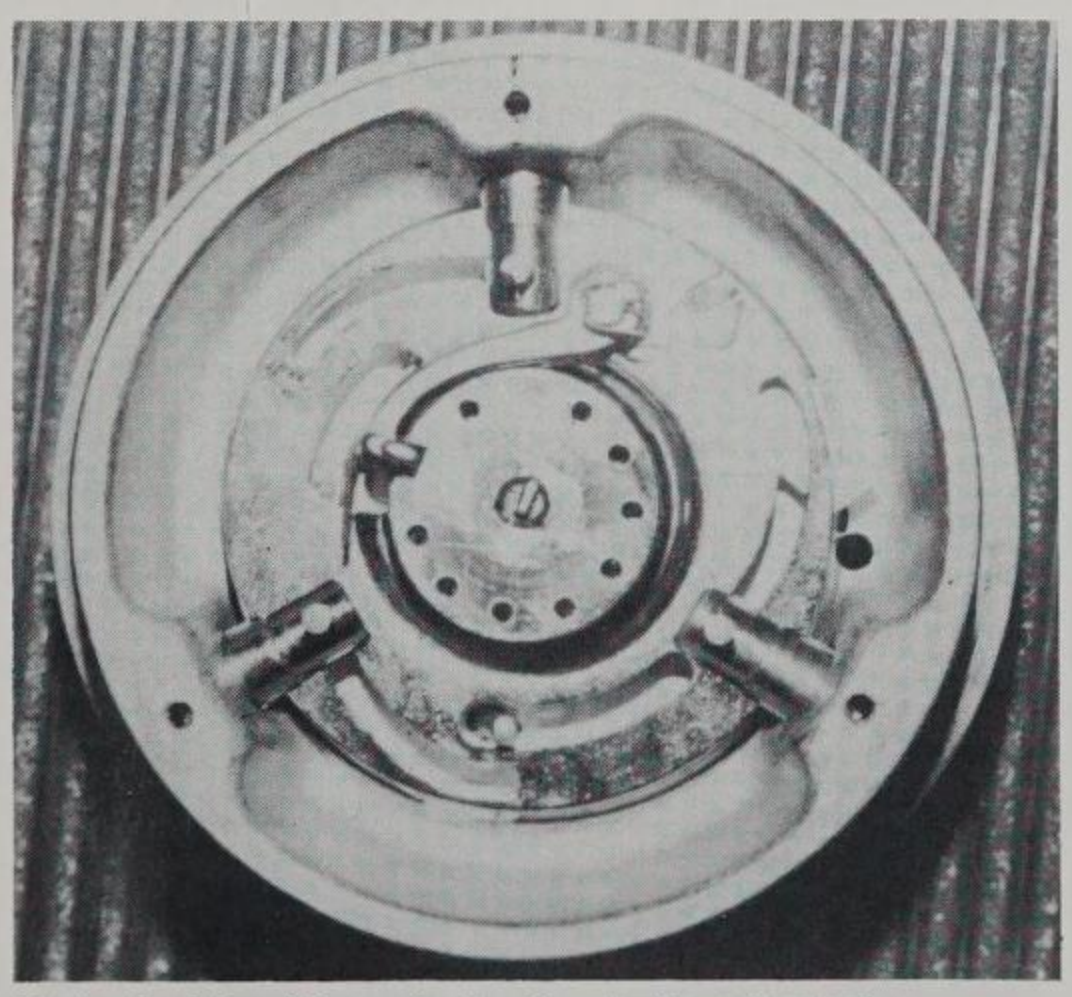
Photograph two shows us the inside of the door with its back plate removed. That was easy, since it was dangling on one screw when Don pulled the door open. This is a tri-bolt door, and the bolts just happen to be at 12 o'clock, 4 o'clock, and 8 o'clock on this door. Drop-in looks to be at about 5 on the dial. The arrow at the left is pointing to the hole Don drilled. Just above this hole is the relocker! In this photograph the bolts are extended.

In photograph three the locking bolts have been retracted.



2. The inside of the C-50.

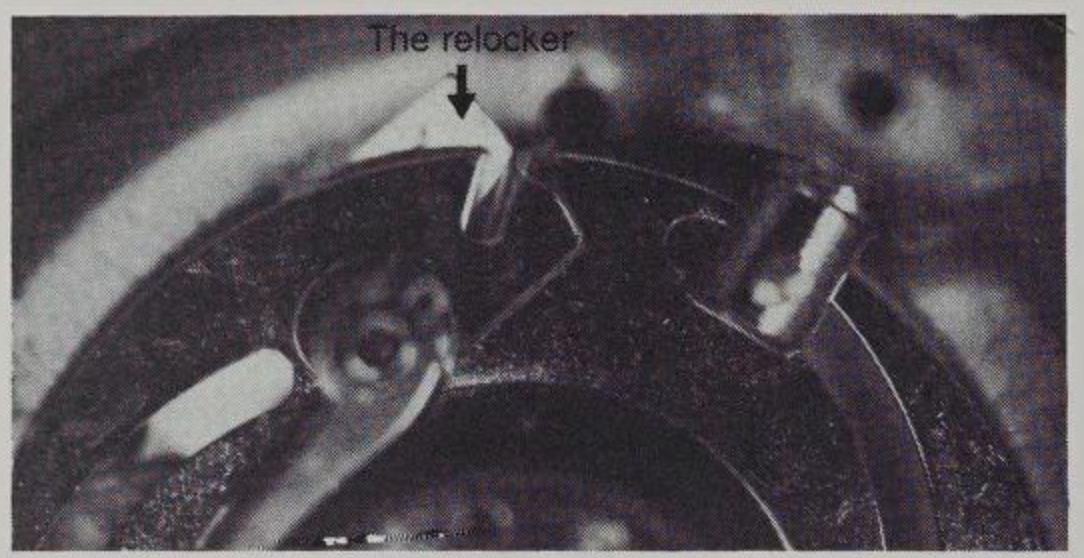
For your information, from the point at which the fence drops in to the point at which the locking bolts are fully retracted is 16 numbers on the dial. This is a helpful piece of information



3. The inside of the safe, locking bolts retracted.

to have, especially when you are trying to determine whether or not a relocker has fired.

Photograph four shows us the edge of the cam plate, and the relocker. Normally, the relocker is held in check by a long post on the back plate. But if the back plate comes loose (either by a burglar or by years of not being serviced) then the relocker, which is nothing more than a piece of spring steel, pops up into the notch in the cam plate and prevents it from rotating.



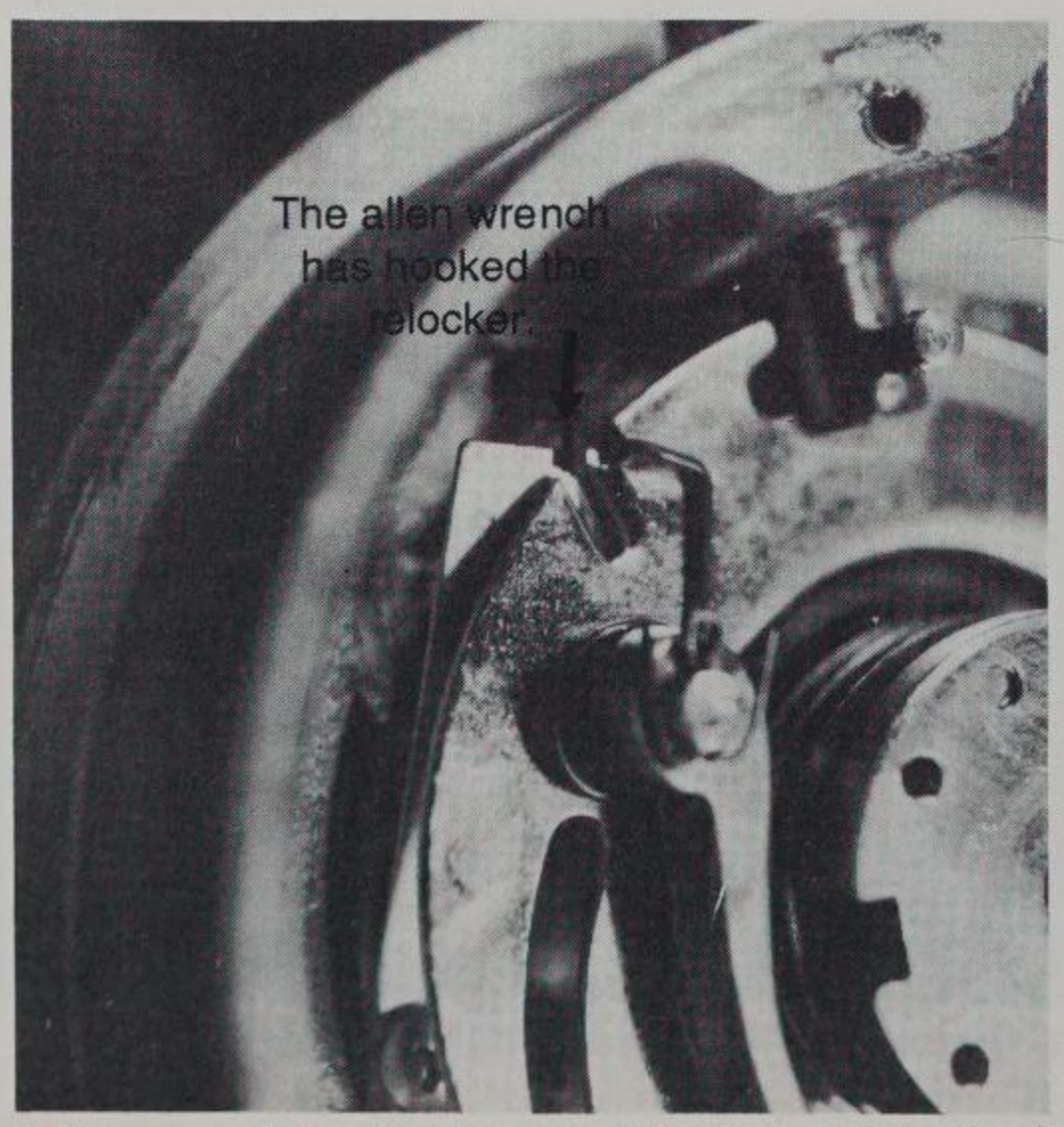
4. The edge of the cam plate. Arrow indicates relocker.

Photograph five shows the custom tool Don made just for this occasion: a small allen wrench with a shortened "L."

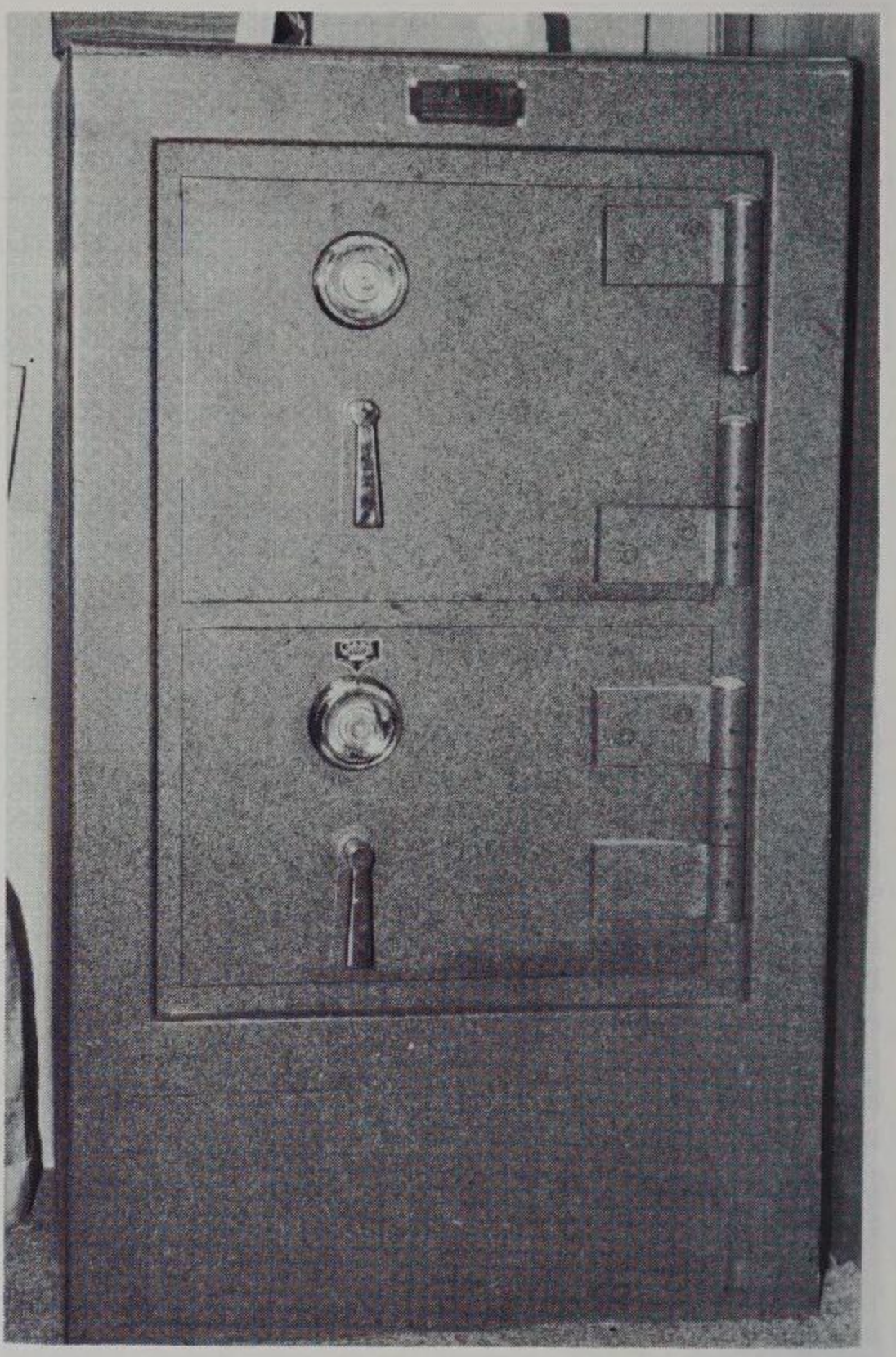
Photograph six is a tough one to make out all the detail, but it tells the whole story. The allen wrench has been inserted through the drilled hole, and has hooked the end of the relocker. From here it is a simple matter of pulling up on the allen wrench and rotating the dial to retract the locking bolts. Good job, Don!

Mr. Spenard's second opening was slick (he must have copied me!). Shown in photograph seven is a double door

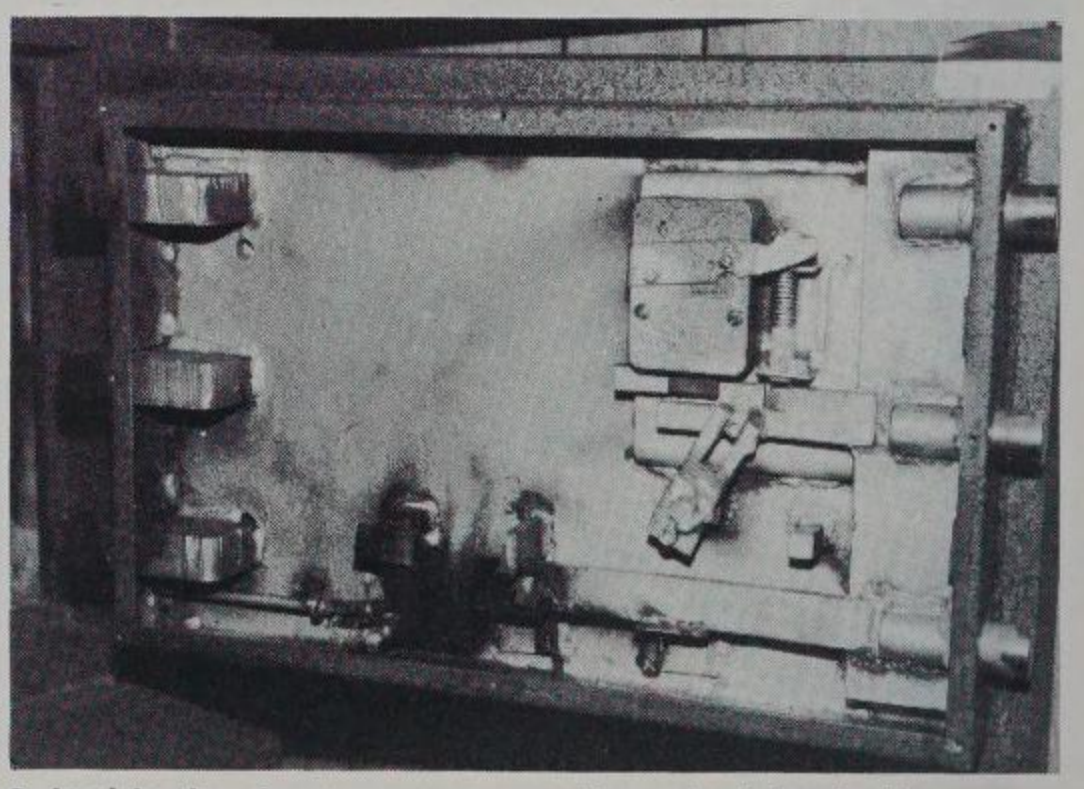
5. A custom Allen wrench, made for the opening.



6. Allen wrench inserted through drilled hole, relocker hooked.



7. A double door Gary, the second opening.



8. Inside the door you can see three locking bolts.

Gary, with square doors top and bottom. The combination to the bottom door had been lost.

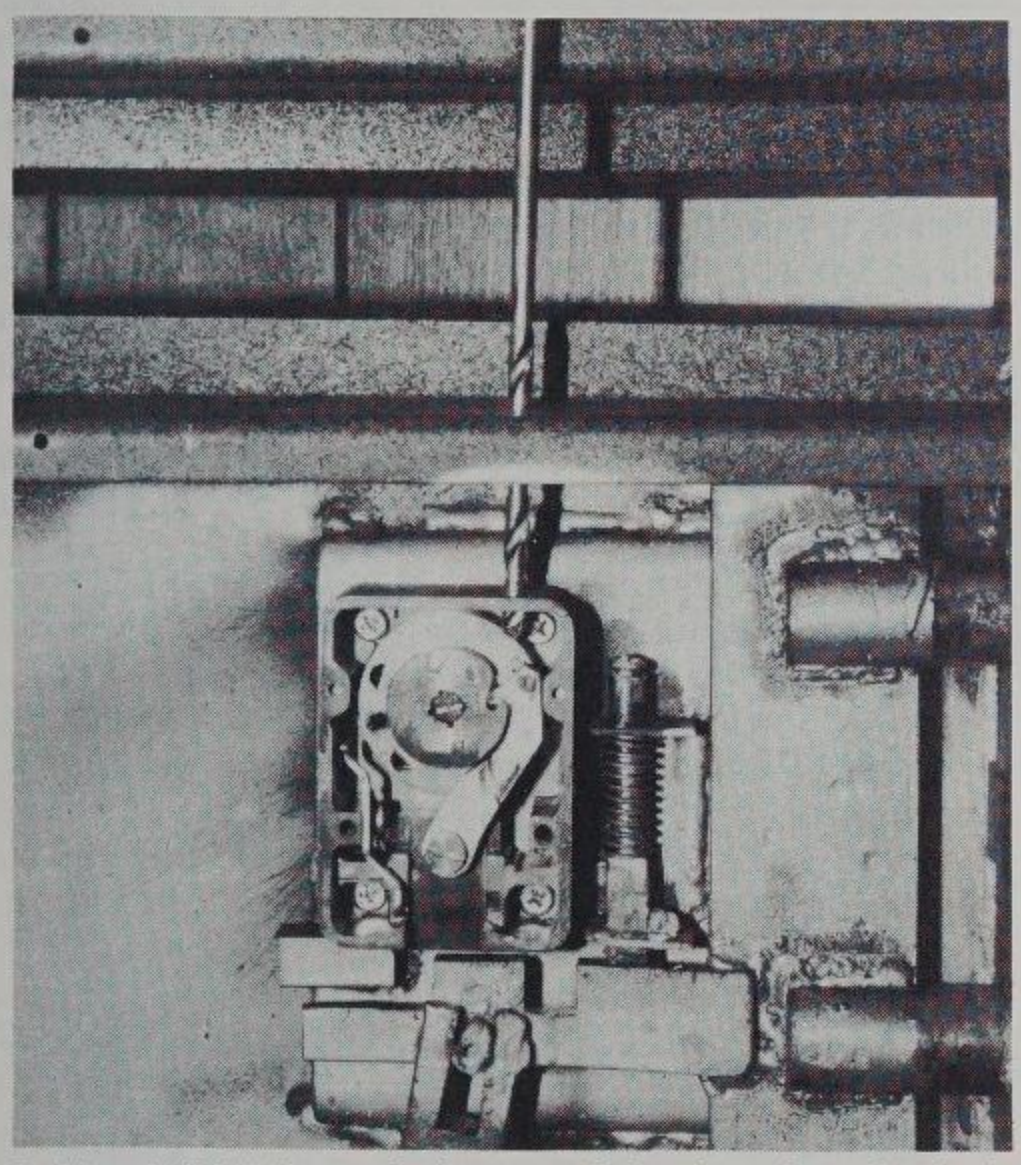
Enter Don. He had the customer open the top door. Don drilled through the floor of the top door, into the bottom door, and penetrated the lockcase. He then stuck a borescope into the hole, read the wheels out and transferred his numbers to the drop-in point. Bingo!

Photograph eight shows us the inside of the door. As you can see, there are three locking bolts on the opening side, the combination lock is mounted VD, and there is an external relocker just to the side of the lock.

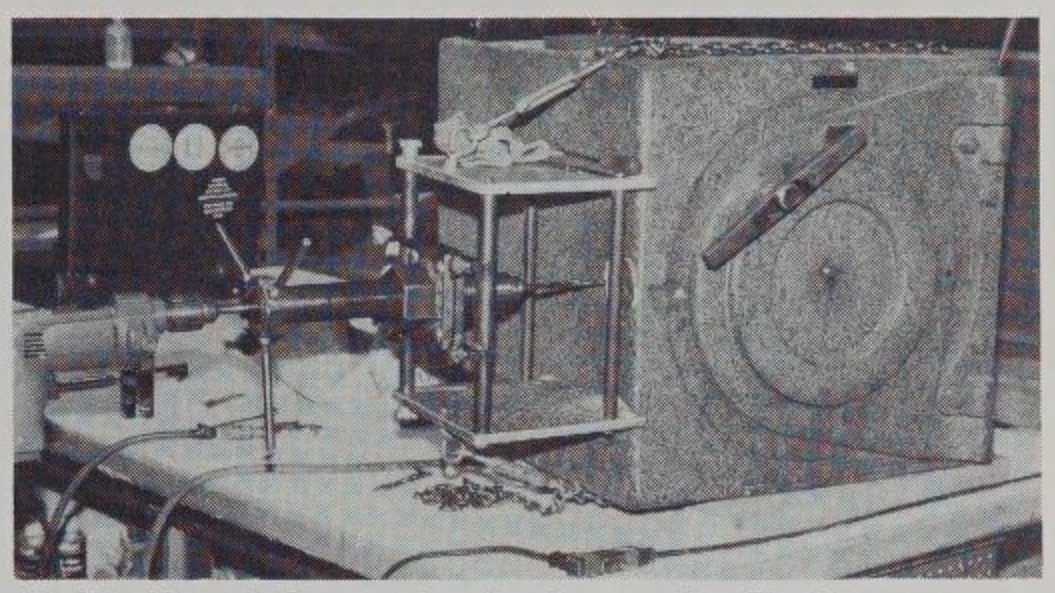
In photograph nine we have reenacted the opening technique. Notice the drill bit going through the top of the door down into the lock. Also notice that the drill bit did not penetrate the middle of the lockcase, but rather penetrated it off to one side. This is important. Had Don penetrated the middle of the lock, it is possible, even probable, that his scope would not have gone far enough into the hole to enable him to see all three wheels. And it is unlikely that his hole was placed so perfectly that all three wheels could have been seen without a scope. (I can do that, but Don can't!) Once again, good job, Don!

Our third and final opening for this month is of an old Mosler lug door. (*See photograph 10.*) The bunglars had their stab at it, and as usual had only made matters worse. So Don thought he would just waltz through the side to punch the locking bolt back. He measured back 2", marked, and tried to center-punch where his mark was, but his center punch just bounced back at him. The body was case-hardened. Tip: The way to tell whether a Mosler lug door has a hardened body is to look for rounded, seamless corners. Every one of these that I have tried to drill had been hard, whereas the square-cornered bodies have not been.

Anyway, Don decided to show off his "Mag-A-Trator" drill rig, so he went out to his truck, brought it in and hooked it up



9. The drill bit through the top of the door, into the lock.

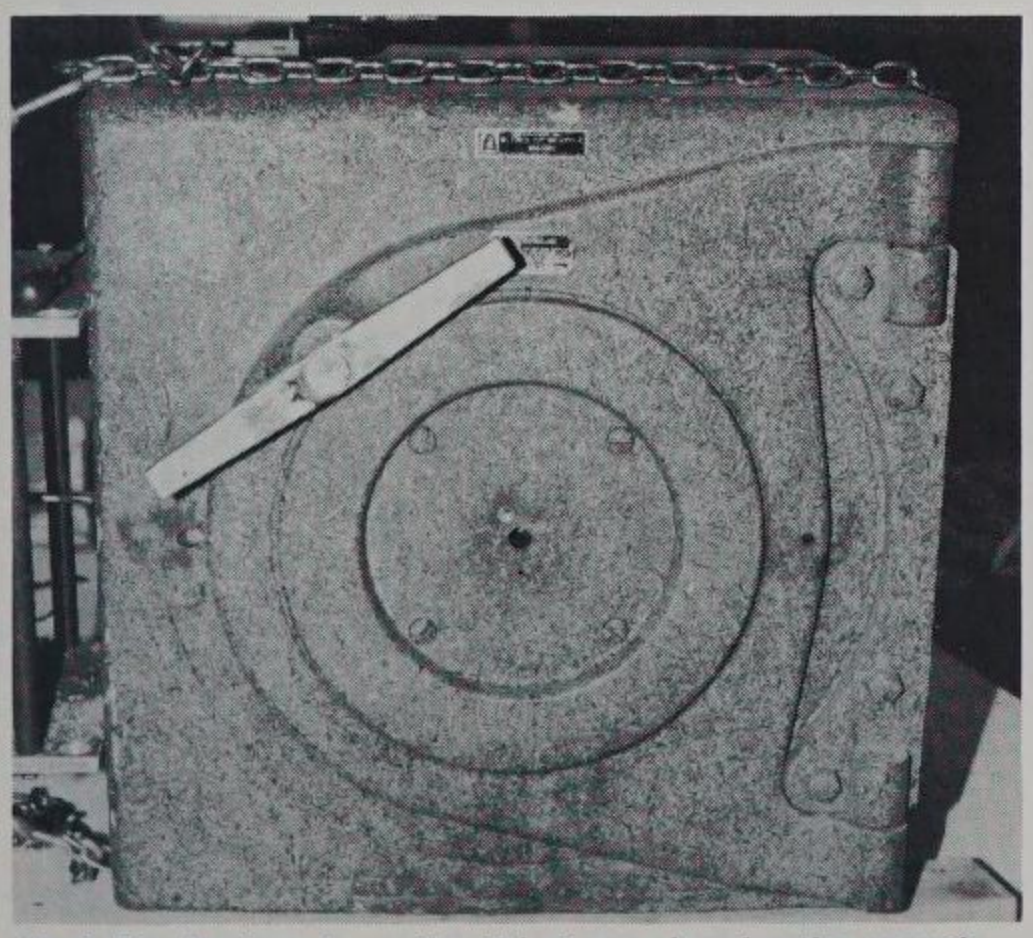


11. The Mag-A-Tractor hooked up to the Mosler.

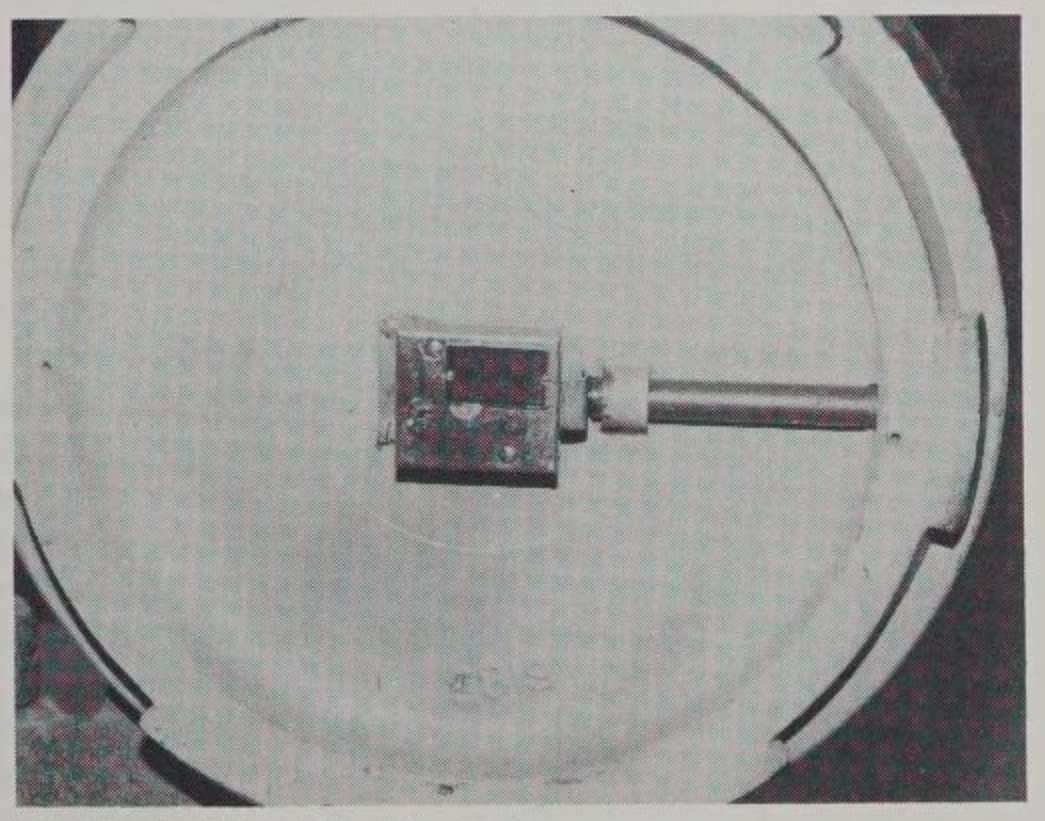
to the side of the Mosler. (*See photograph 11.*)

Of course, the Mag-A-Trator, with help from Strong Arm drill bits, sailed right through the side of the Mosler. Once the hole was completed, Don peeked in, and he saw a most beautiful sight—the end of the locking bolt. Insert punch, BAM, BAM, and she was open.

Photograph 12 shows us inside the Mosler. These old lug doors were sure simple affairs on the inside. A combination lock and a single locking bolt with a built-in relocker. That's it.



10. A Mosler lug door, the third opening for the month.



12. The inside of the Mosler.

Nevertheless, this simple design kept out many a burglar. And that's what the game is all about. One last time, all together: Good job, Don! See ya next month. §

Don Spenard has been one of my best safecracking buds for well over a decade. We first met back in 1983, when I was running up and down the west coast, selling recipe boxes full of safe photos, fully indexed and filed alphabetically. Don was one of my first customers, and without question was the most enthusiastic. He shared that burn, that unquenchable thirst for more. And for those of you who haven't been to Don's house, he has the coolest collection of safe locks this side of Harry Miller. Check it out the next time you are in Seattle. Don is in the phone book.

by Dave McOmie

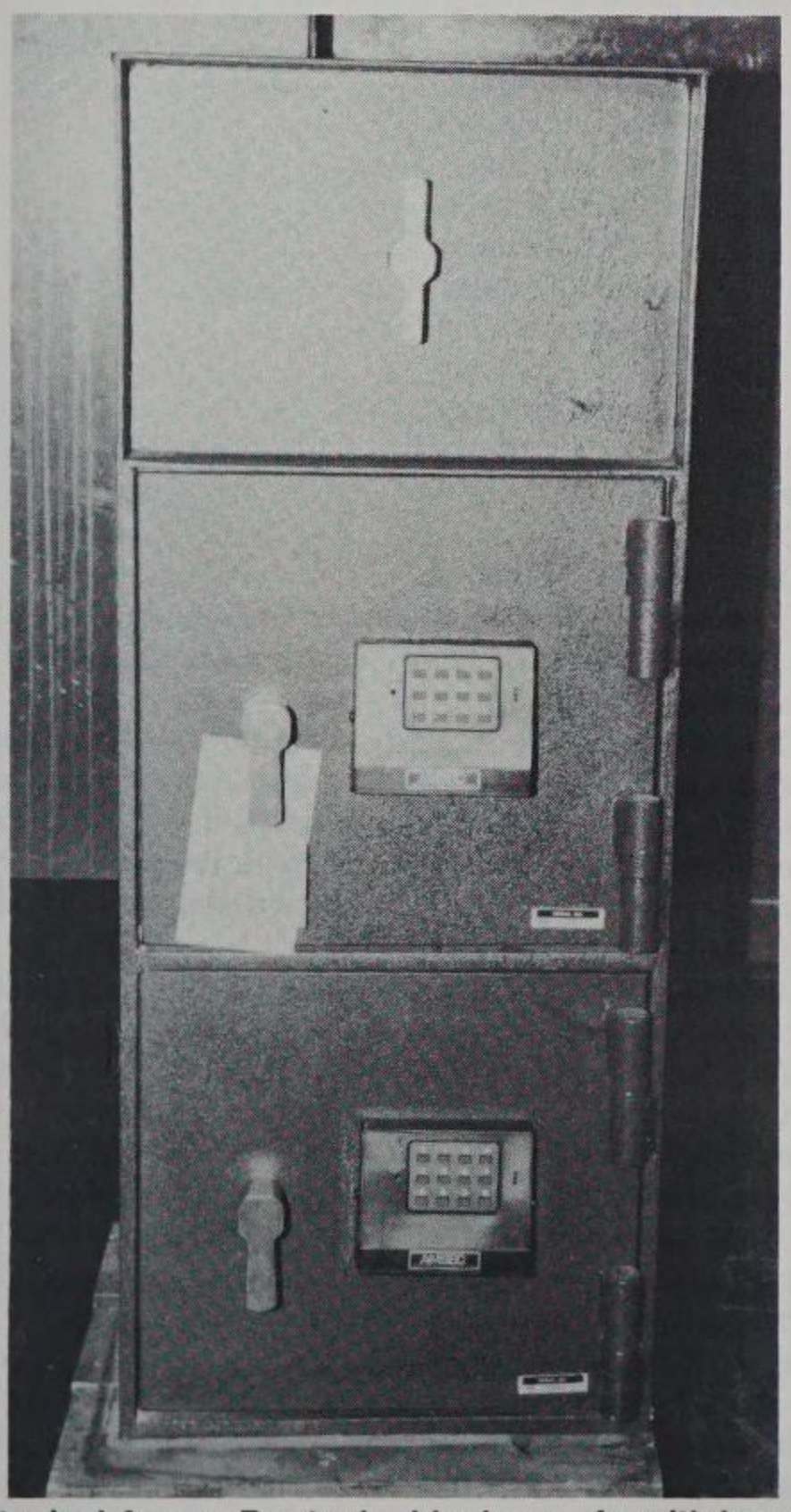
Amsec Safe & Lock

"This month we're looking at one of the smaller, but earliest developers of an electronic safe lock."

After several false starts, electronic locks are fast becoming the rage of this industry. The big players are LaGard in the commercial end, and Mas-Hamilton in the government end. The little players are all commercial: AMSEC, Aanon, and S&G.

This month we are looking at one of the little players in electronic locks. They may not be the biggest, but AMSEC was one of the first. In fact, they only embarked on the project to produce an electronic lock after they had gone to LaGard and S&G and been turned down!

In photograph one we have a typical new AMSEC B-rate double door safe with a hopper. Both doors sport the AMSEC KPL-100 electronic lock.



1. A typical Amsec B-rate double door safe, with hopper.

Photograph two is a close-up of the keypad. The "C" button is the "clear" button; the # button is the enter button. Let's go over the dialing procedure.

2. A close-up of the keypad.

"Dialing" Open The Lock.

(1) Press the "C" button. You will hear a beep and the LED lamp will flash.

(2) Press the numbers of the combination. As you press each number of the combination, you will hear a beep, but the lamp will not flash. The factory combinations used to date are 1-2-3-4, and 1-2-3-4-5-6.

(3) Press the "#" key to enter the combination. The lock is open and will remain open for approximately three seconds.

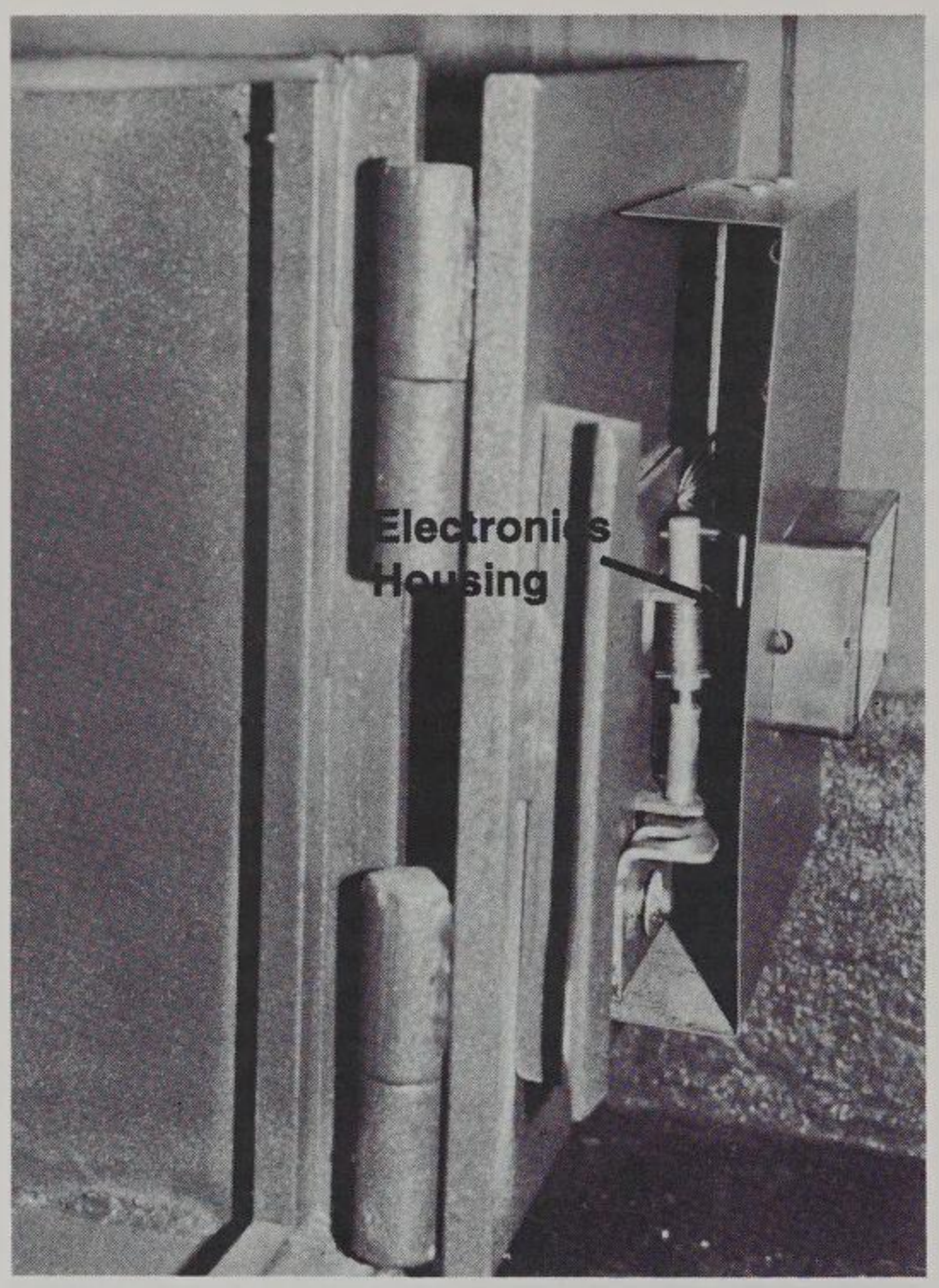
In photograph three the door is open, and we have kind of a side-view of the door from the hinge side. The arrow is pointing to the electronics housing that is mounted on the back of the door. As the name suggests, almost all the electronic goodies are in this housing. Also in the housing are the buttons for changing the combination, and also the time delay control switch. Let's look at them one at a time.

In photograph four we have the electronics housing, with its instructions on the cover. Let's change the combination:

Changing The Combination.

Changing the combination on a KPL-100 is a piece of cake. Simply proceed as follows:

(1) Remove the plug that covers the change hole on the



3. Side view of the open door.

4. Instructions on the electronics housing cover.

electronics housing and press the button in the hole once with a non-metallic object small enough to fit in the hole. When you press the button, the LED lamp on the input pad will light up and stay lit.

(2) Starting with the first number (not "C") input the new combination (six digits).

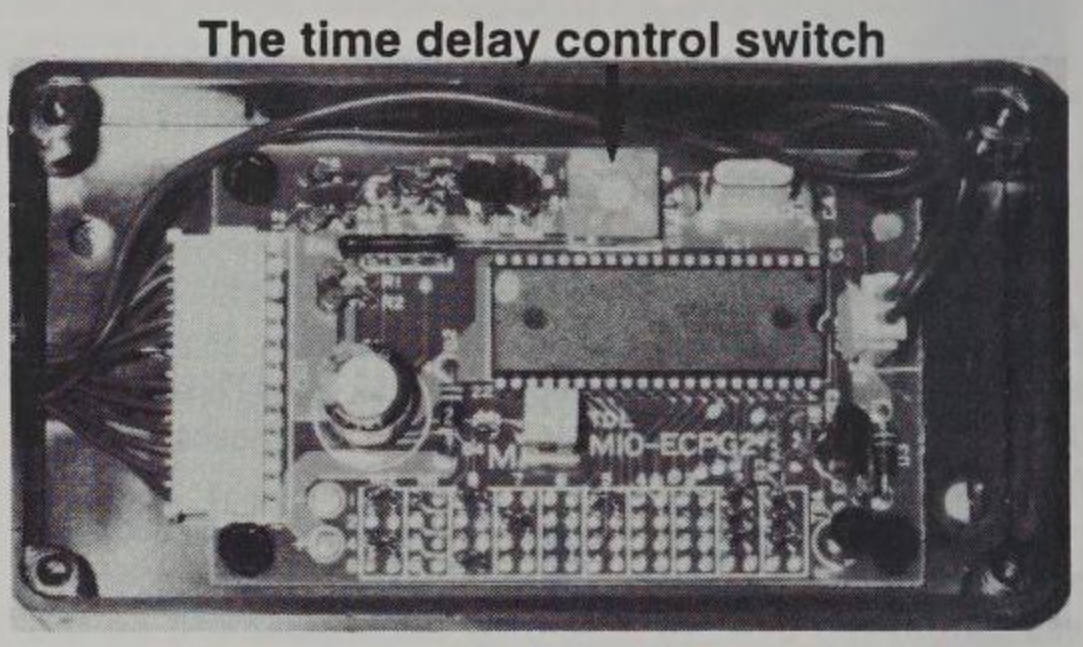
(3) Press "#" to enter the new combination. You will hear a continuous beeping sound for two seconds while the new combination is being accepted. That's it—you're done!

Before we look inside the safe door, let's look inside the electronics housing at the time delay feature:

The Time Delay Feature.

The KPL-100 is equipped with a time delay feature which each customer can choose to use or not use. To gain access to the control switch for the time delay you must remove the cover of the electronics housing. This can be done with a #10 Torx wrench or, in a pinch, you can use a 5/64" allen wrench.

Photograph five shows us the electronics housing with its cover removed. The arrow is pointing to the 10 position rotary switch. This switch is very small, about 3/8" x 3/8",



5. Electronics housing with cover removed.

with a small arrow that is very important. The position of the arrow determines the length of the time delay. It can be rotated with a small screwdriver. The numbers correspond to the following time delay periods:

O = No delay
1 = 1 minute delay
2 = 2 minute delay
3 = 5 minute delay
4 = 10 minute delay
5 = 15 minute delay
6 = 20 minute delay
7 = 30 minute delay
8 = 45 minute delay
9 = 60 minute delay

To open a KPL-100 with a time delay, proceed as follows:

(1) Press "C."

(2) Input the combination.

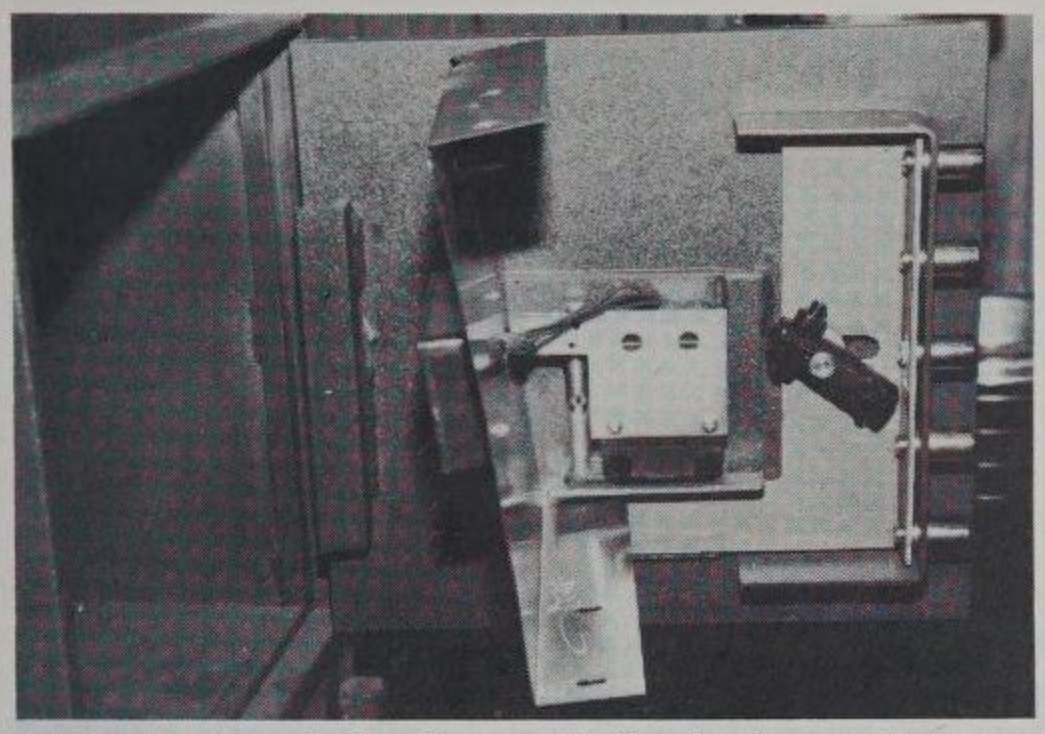
(3) Press "#". The delay period begins, and the LED lamp confirms this by flashing on and off continuously for the duration of the delay.

(4) When the delay period has run down, you will hear four enunciator tones, followed by a pattern of beeps and flashes. The pattern is four quick beeps in sync with four flashes of the LED lamp, followed by a brief pause, then the pattern begins again. This pattern continues for five minutes or until the lock is opened.

(5) While the lock is in its beeping and flashing pattern you can open it by pressing "C", the combination, and then "#". If more than five minutes pass since the delay has run down, the beeping and flashing pattern will cease, and the entire process must be started again.

In photograph six we see the inside of the door with the back panel turned sideways as far as the wires from the electronics housing to the lock will allow. The KPL-100 is mounted VD, just like the regular mechanical lock would be. There are five (count 'em!) locking bolts on this little B-rate door. Notice the external relocker just to the left of the lock.

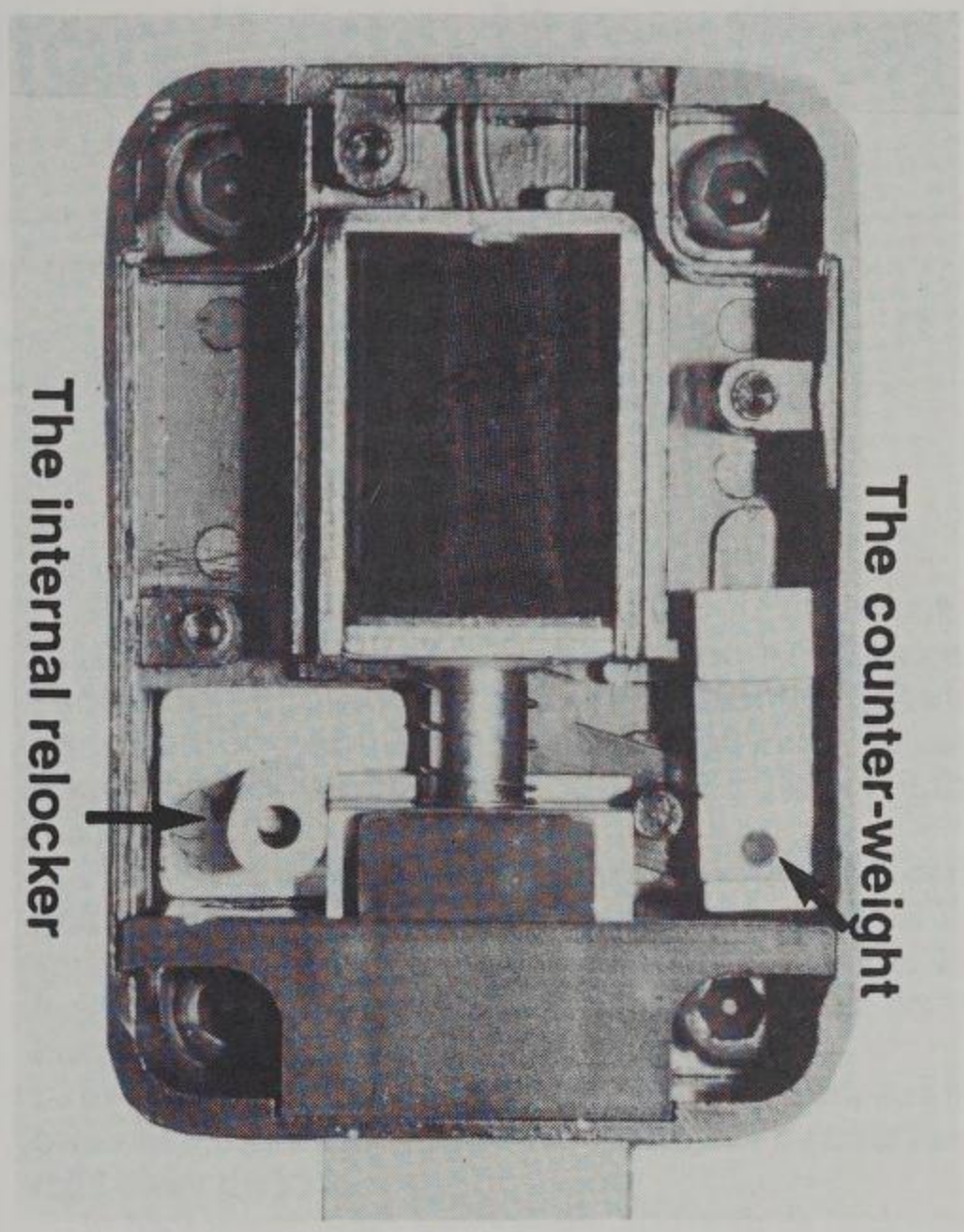
Photograph seven shows us the inside of the KPL-100. As you can see, it is a pretty simple affair, with a solenoid attached to a lockbolt, a counterweight (see arrow), and an



6. The inside of the door with the back panel turned sideways, allowing you to see the KPL-100 lock.

internal relocker (see double arrow). The relocker fires when the back cover is removed. The counter-weight guards against the lock being vibrated or jolted open.

Well, I hope you have enjoyed this brief look at the KPL-100 and the AMSEC B-rate square door. See ya next month. §



7. The inside of the KPL-100 lock.

by Dave McOmie

Hamilton/Mas-Hamilton

"The very act of turning the dial is what provides power to the lock. Powered up, the numbers will show on the LCD."

We have all heard a lot about the Mas-Hamilton X-07, the most revolutionary combination lock in history. But we haven't looked at one on a safe, so this month let's look at an X-07 on a Hamilton "Red Label" Class 6 Security File. (*See photograph 1.*) The combination lock is on drawer number two.

Photograph two is a top-view of the X0-7's display, shown just as the lock was being opened. The "OP" in the display tells you that the lockbolt can and is being retracted.

Photograph three is of the famous "red label" designating this a GSA approved container.

Photograph four shows us the service parts list that is on the side of the drawer. Notice that the part number for the lock and dial assembly has been whited out and a new number written in by hand. Hmmm. I'll bet that new number indicates an X0-7.

Photograph five tells us that this is a U.S. Government Class 6 cabinet which has been approved by GSA under Federal Specification AA-F-358G. It affords the following protection: 30 man-minutes against covert entry. 20 man-hours against surreptitious entry. No forced entry requirement.

Photograph six takes us inside the cabinet for a look at the lock and boltwork. As you can see, the X0-7 is mounted VD, and there are two locking bolts, one on each side. The lockbolt of the X0-7 blocks the locking bolts of the drawer from being retracted.

In photograph seven the X0-7 has been opened, and the boltwork retracted. Notice how the locking bolts almost touch right under the lock.

In photograph eight we have the X0-7 with its back cover removed. It looks fairly normal, with a driver, a lever, a lockbolt, mounting screws, etc. But the back cover with all the computer and electronic goodies attached is anything but normal. (*See photograph 9.*)

1. Mas-Hamilton lock on a Security File.

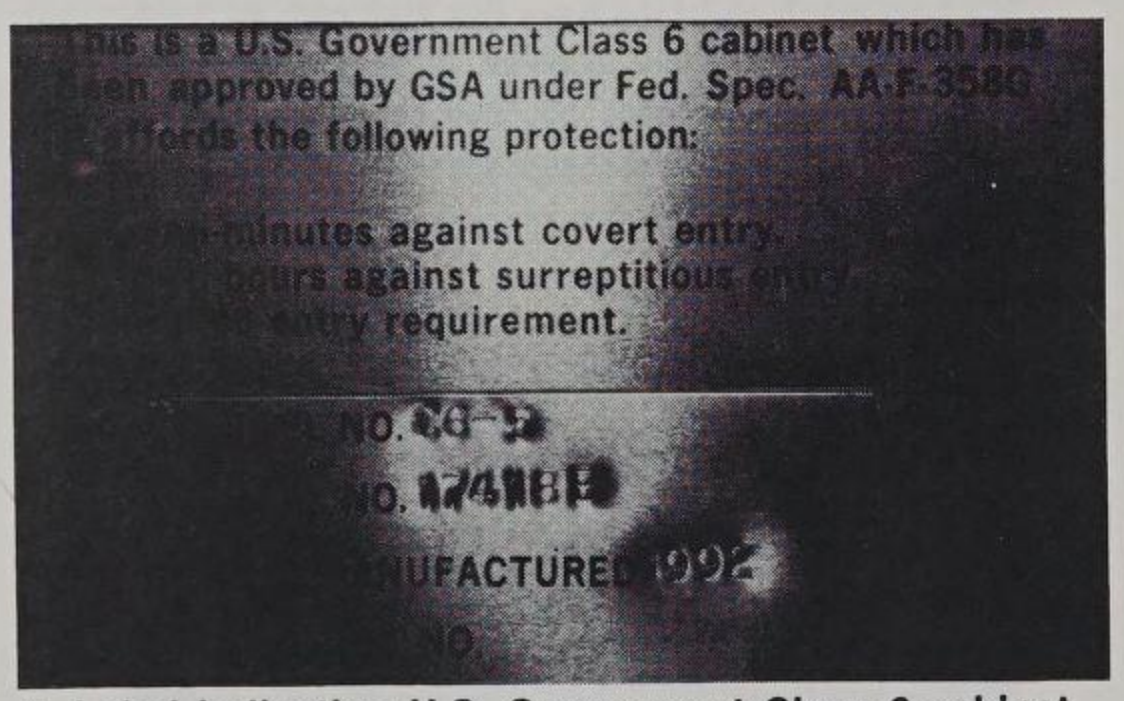
2. A top view of the X0-7 display.

3. The "red label" designating a GSA container.

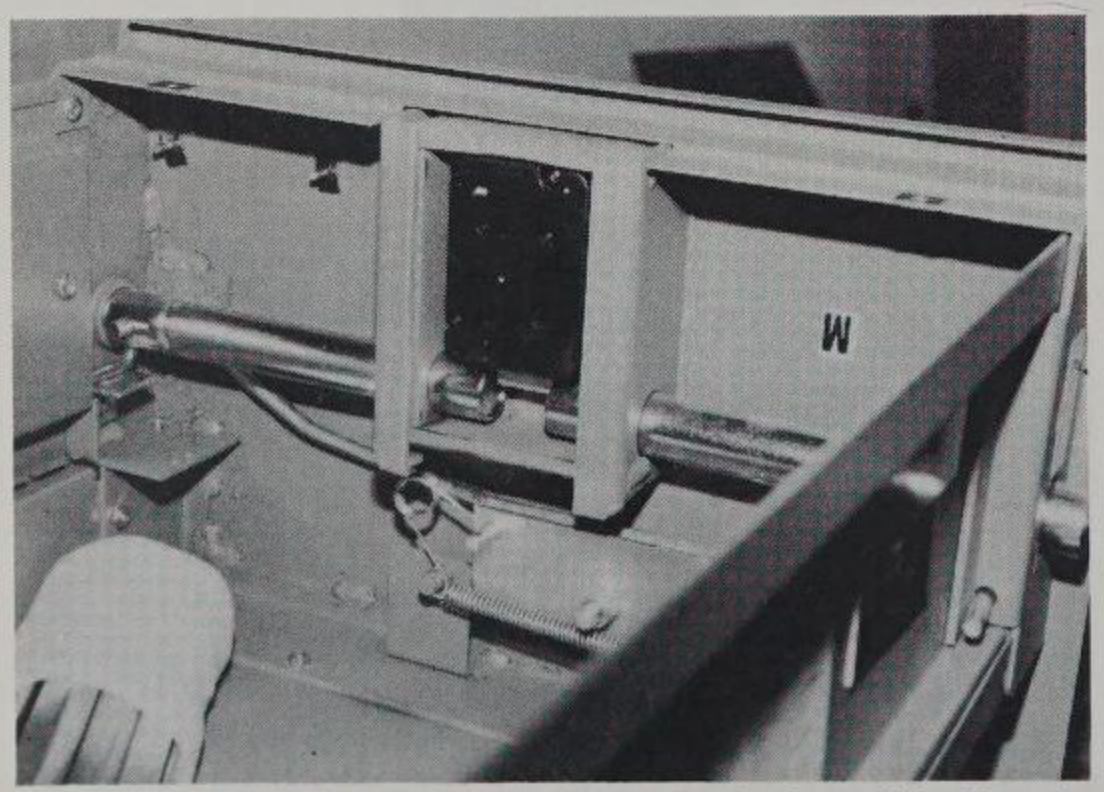
SERVICE PARTS LIST
CLASS 6 SECURITY FILE

PART NO.	DESCRIPTION
1023-A	NO-LOCK DRAWER ASS'Y
1341-A	LOCK DRAWER ASS'Y
1342-A	DUAL LOCK DRAWER ASS'Y
1010-A	SLIDE PAIR ASS'Y
1010	LOCK & DIAL ASS'Y (KEY-CHANGE)
1369	LOCK & DIAL ASS'Y (HAND-CHANGE)
1370	HANDLE ASS'Y (LOCK DRW.)
1373	HANDLE & LATCH ASS'Y (NO-LOCK DRW.)
1374-A	LOCKING BOLT & LINKAGE ASS'Y (STD. DRW.)
1374-B	LOCKING BOLT & LINKAGE ASS'Y (DUAL LOCK DRW.)
1114-A	BOLTWORK COVER
1314-A	FOLLOWER BLOCK ASS'Y

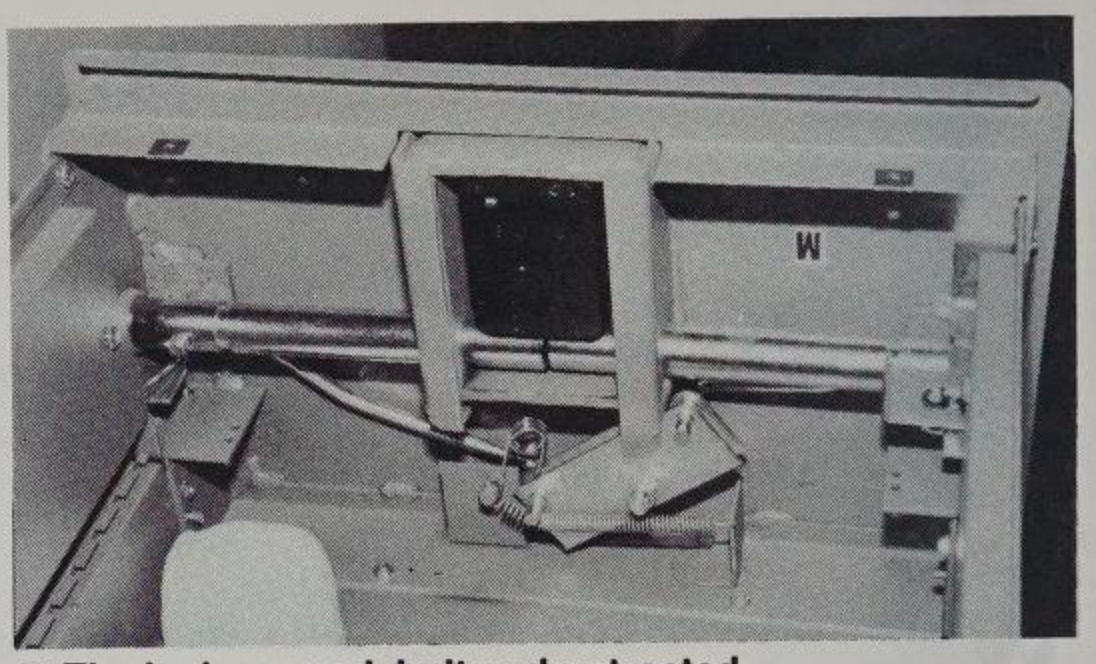
4. The service parts list from the side of the drawer.



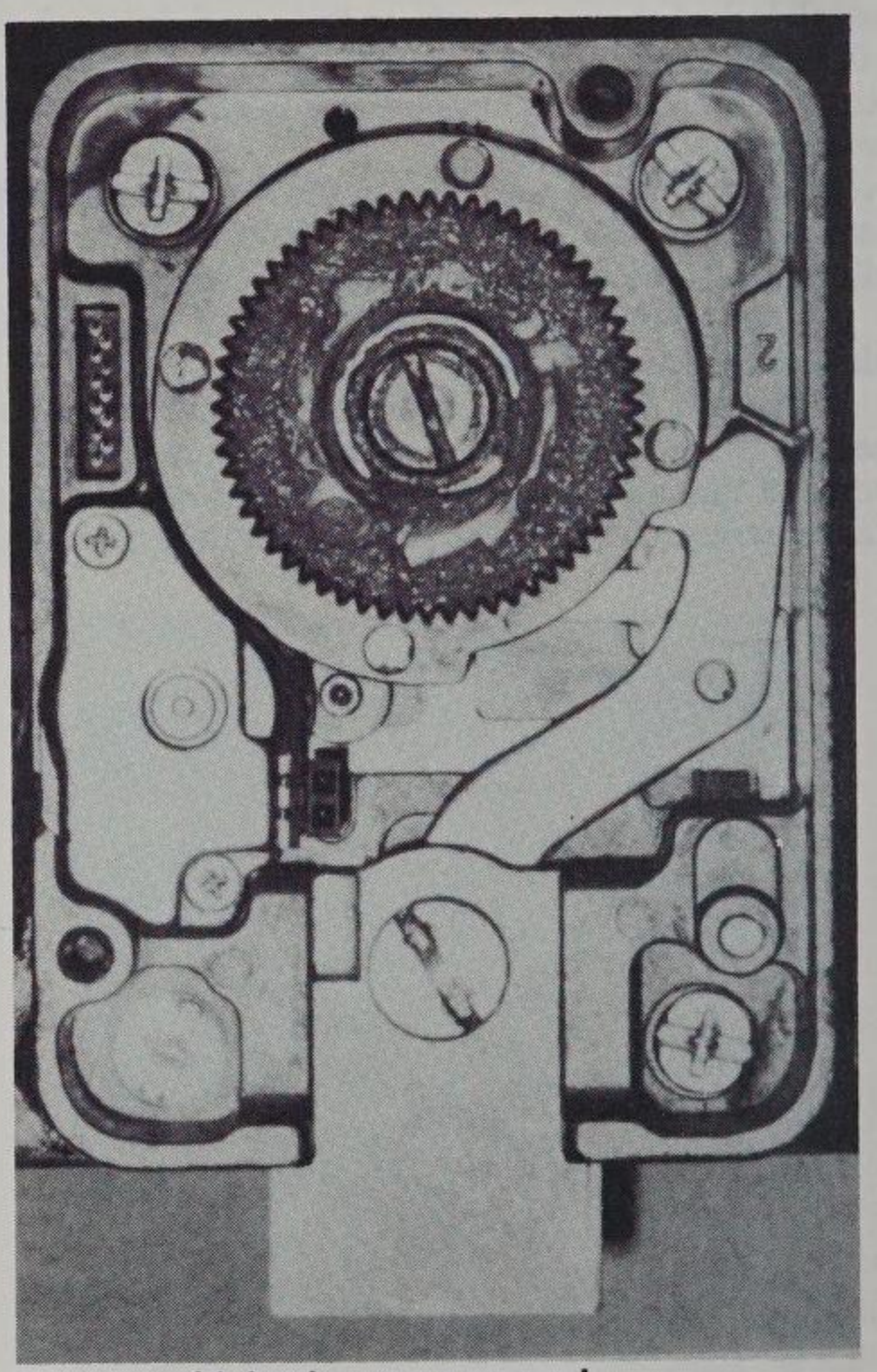
5. Label indicating U.S. Government Class 6 cabinet, approved by GSA.



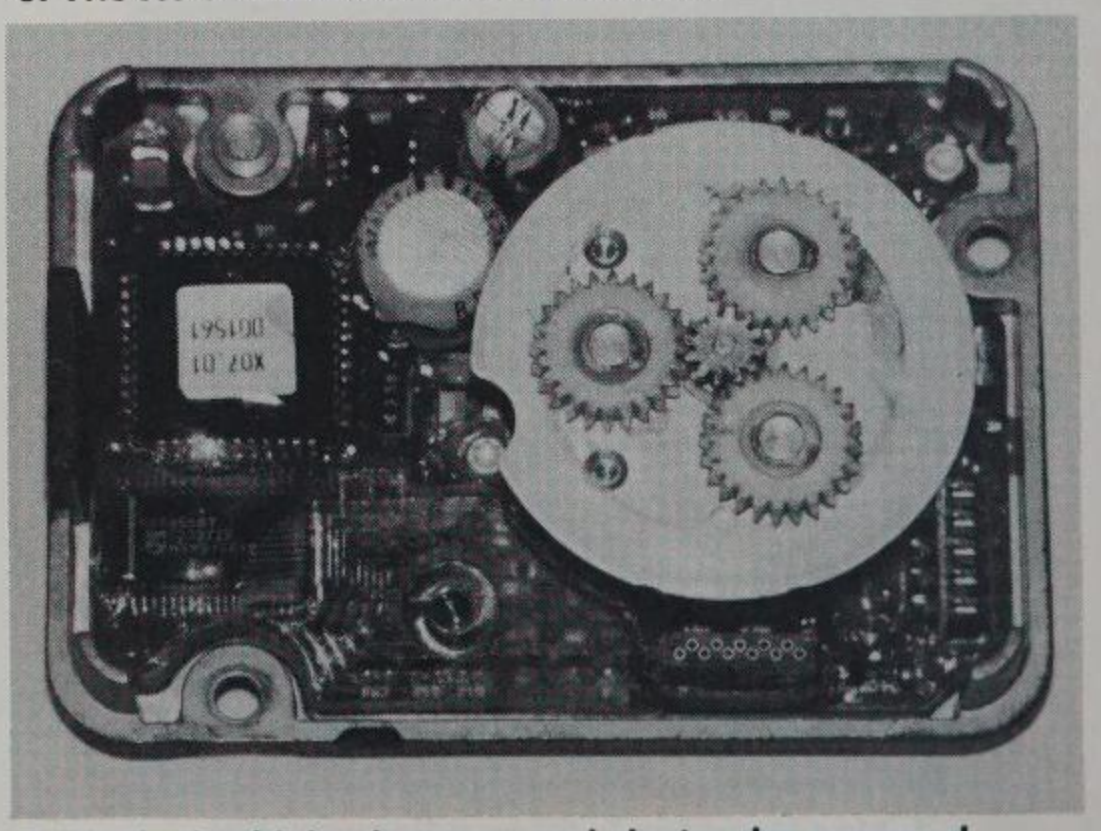
6. Inside the cabinet and under the lock and boltwork the X0-7 is mounted VD, with two locking bolts.



7. The lock opened, boltwork retracted.



8. The X0-7 with back cover removed.



9. The lock with back cover, and electronics removed.

With that brief tour of a Class 6 Hamilton Security File out of the way, let's turn now to the operation of an X0-7.

"Dialing" Open The Lock.

The very act of turning the dial is what provides power to the lock. Once it is powered up, numbers will show up on the LCD. The factory combination is 50-25-50. To open the lock, proceed as follows:

(1) Rotate the dial to the left, stopping when you see 50.

(2) Rotate the dial to the right, stopping when you see 25.

(3) Rotate the dial to the left, stopping when you see 50.

(4) Rotate the dial to the right to retract the lockbolt; as you do so, **OP** (**OP**en) will be displayed.

Changing The Combination.

To change the combination on an X0-7, proceed as follows:

(1) Dial the current combination and retract the lockbolt.

(2) Insert change key

(3) Dial in current combination. (Change key symbol will appear on LCD).

(4) SL will appear on LCD. This means we have to select the mode of operation. Our choices are "1" single combination mode, "2" dual combination mode, or "3" supervisory/subordinate mode. For example, if we want the single combination mode, we simply rotate the dial to the left until "1" appears on the LCD. We stop on "1".

(5) Rotate the dial to the right until EC appears on the LCD. This means we have to Enter the new Combination. So we enter the new combination.

(6) The X0-7 will flash the new combination three times, then CC will appear on the LCD. This means we have to confirm the combination, which we do so by simply dialing in the new combination and retracting the lockbolt. The new combination is now set.

LCD SYMBOLS

Here is a list of symbols that can appear on the LCD of the X0-7:

OP.....**OP**en right
SL.....**S**e**L**ect mode
EC.....**E**nter **C**ombination
PO.....**P**ull **O**ut change key
CC.....**C**onfirm **C**ombination
E1.....**E**nter **1**st combination (in dual combination or super/sub mode)
E2.....**E**nter **2**nd combination (in dual combination or super/sub mode)
UL.....**U**n**L**ocked (in super/sub mode)
LU.....**L**ocked **U**p (in super/sub mode)

There are four other symbols. A key symbol means the change key has been inserted, and the lock is in the change mode.

A lightning bolt means that an incorrect combination has been entered—you need to start over. A lightning bolt plus a flashing number is an auditing feature that counts the unsuccessful attempts to open the lock. This feature is accessible by rotating the dial slowly to the right while powering up, and resets itself after each successful opening. (If there have been less than three unsuccessful attempts after the last opening, nothing will register). The other auditing feature counts the successful openings. This feature appears as two alternately flashing numbers with arrows, and is accessible by rotating the dial slowly to the left while powering up. This feature never resets.

Well, I hope you have enjoyed this brief look at the Hamilton Security File and the Mas-Hamilton X0-7. By the way, in case you were wondering, there is no relation between the Hamiltons. They tell me it is pure coincidence.

On December 8, 1992, Mas-Hamilton ceased production of the XO-7 because one of the government testing labs developed a technique for covertly defeating the lock. Mas-Hamilton went to work and modified the X-07 to overcome the weakness that the government boys were exploiting. Reapproval came on January 22, 1993. So far, mum has been the word from Uncle Sam and from Mas-Hamilton; they aren't talking about the technique that was used. Hmmm...

See ya next month. §

The XO-7 has had its share of problems, from defective parts to covert entry attacks. But Mas-Hamilton hasn't tried to duck any of them. They have faced each problem squarely, and solved each and every one. That is impressive. At this point, I can say unequivocally that the XO-7 is far and away the best combination lock in the world. There isn't even a close second.

by Dave McOmie

Shelling Safes at the Seashore

"Every time a call comes in to open a safe along the coast, I jump at the opportunity."

I love having an excuse to go on vacation. And one of my favorite places to go on vacation is the beach. So every time a call comes in to open a safe along the coast, I jump at the opportunity.

This time the opportunity came from Tom Jones, of TJ's Lock and Safe in Tillamook, Oregon. For those of you who didn't know, Tom retired from the entertainment industry a few years ago, and made a career change; he is now a locksmith and loves it. As you can guess, Tom spends as much time signing autographs as he does picking locks, but it doesn't seem to bother him.

Tom originally had two jobs lined up for us to do: (l) a Hall's vault door, and (2) a Mosler GSA container. But the Mosler canceled at the last minute. Even though it meant my payday was now a half payday, I was still excited to go. So were Val and the kids. We loaded up the car with swim suits, travel games, and a cooler full of soda pop, and headed for an. . . American Beach Vacation! (Soon to be released, starring Chevy Chase).

Upon arriving at Tillamook, Val and the kids dropped me and a hand truck full of equipment off at the job site, where I met Tom and our opponent, shown in photograph one. I apologize for the photo, but the vault door was in a narrow hallway, and this was the absolute best angle I could get on it. Notice that it is a left-hand door (facing the door, the hinges are on the left). Everything about this door is distinctive, from the handle and dial to the hinge caps. But identification is made easiest by the lettering across the front of the door. (*See photograph 2.*)

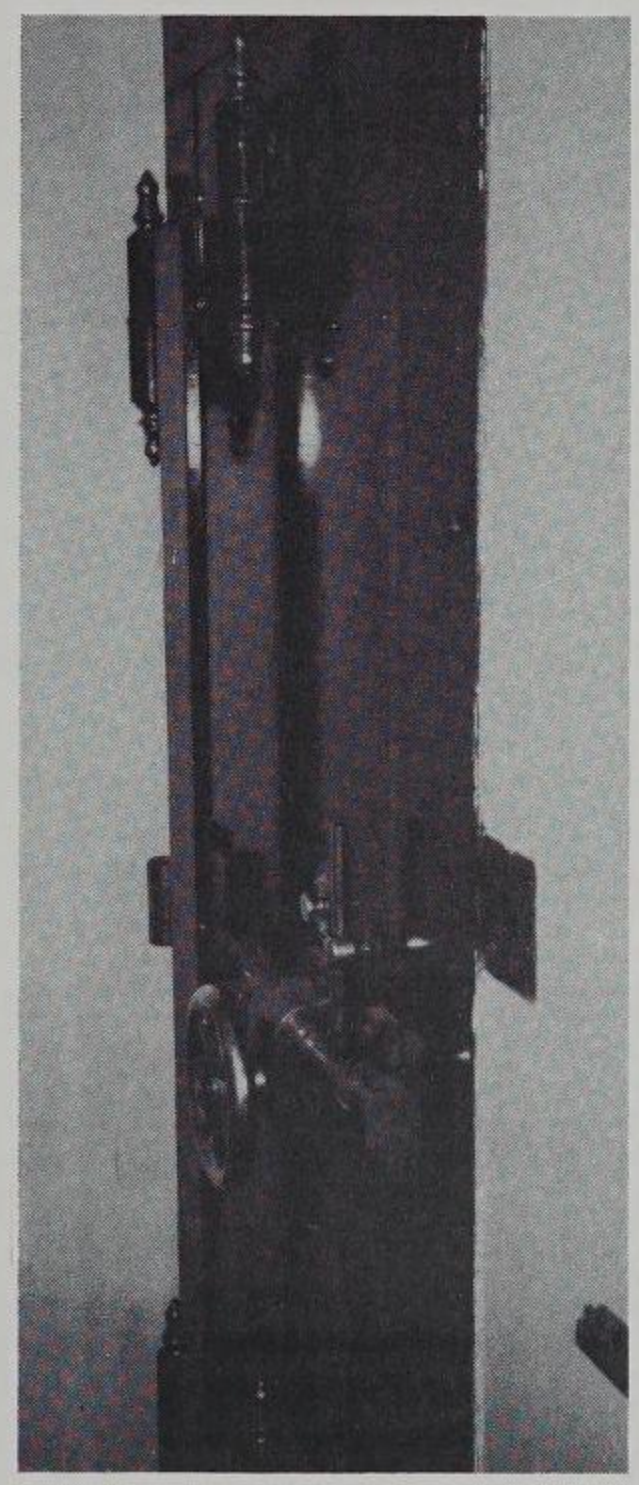
In photograph three we have the dial and handle. Notice the handle is upside down. That is because this is a LH door; on a RH door the handle would point down rather than up.

Let's zoom in for a look at the dial and then the handle. In photograph four we have a close-up of the 100# Hall's dial. (This same door can also be seen with a 130# dial). Around the perimeter of the dial knob reads "The Hall's Safe Co." Notice the distinctive dialing index—a circle with a straight line facing the numbers.

In photograph five we have a close-up of the L-handle. There is a 5-digit number (65158) stamped on the handle. I don't have a clue how Hall's referenced those numbers, but the numbers on this handle aren't useful, as they would be on a Cary, for example. (Although there are better ways of identifying Carys than by the number on the handle).

Photograph six shows the top half of the top hinge, and most importantly, the hinge cap. (The Safe Opening courses I am working on will have a complete section devoted to identification via dials, handles and hinge caps).

By the time I was done taking all these photographs,



1. A Hall vault door safe.

2. The identifying lettering found on the front of the

Tom was getting just a little edgy.

"Well, shall we open her now?" he asked.

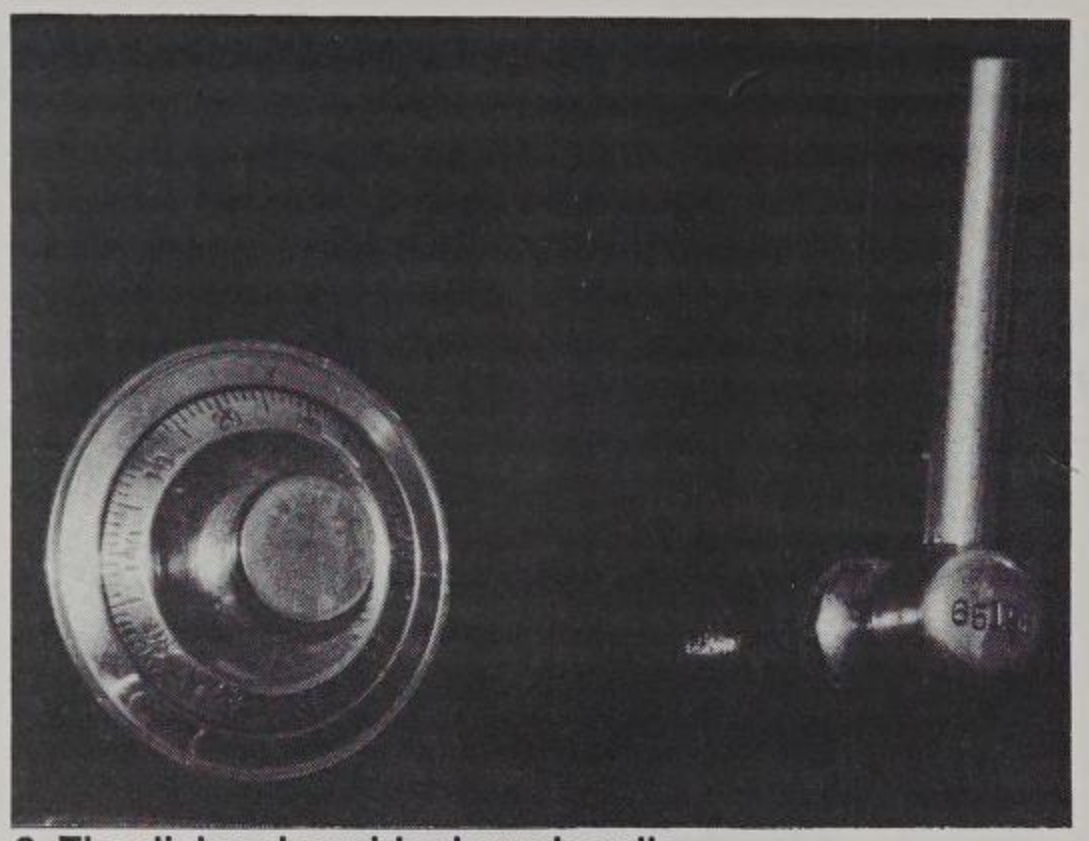
"Yup," I replied.

"Shall we manipulate or penetrate?"

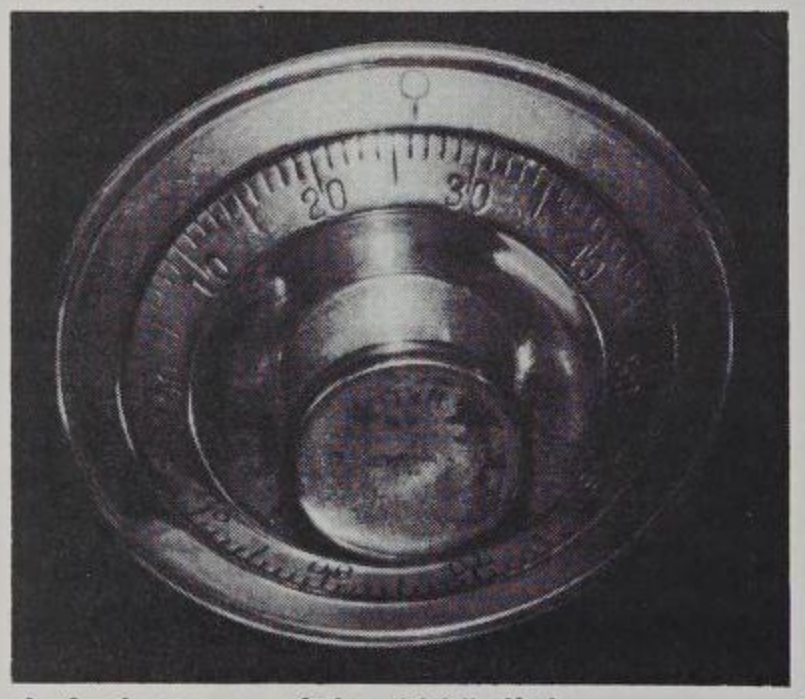
"Real men don't manipulate."

"But Dave, you manipulated that Gary TL-30 for me last year, remember?"

"Tom, that was different."

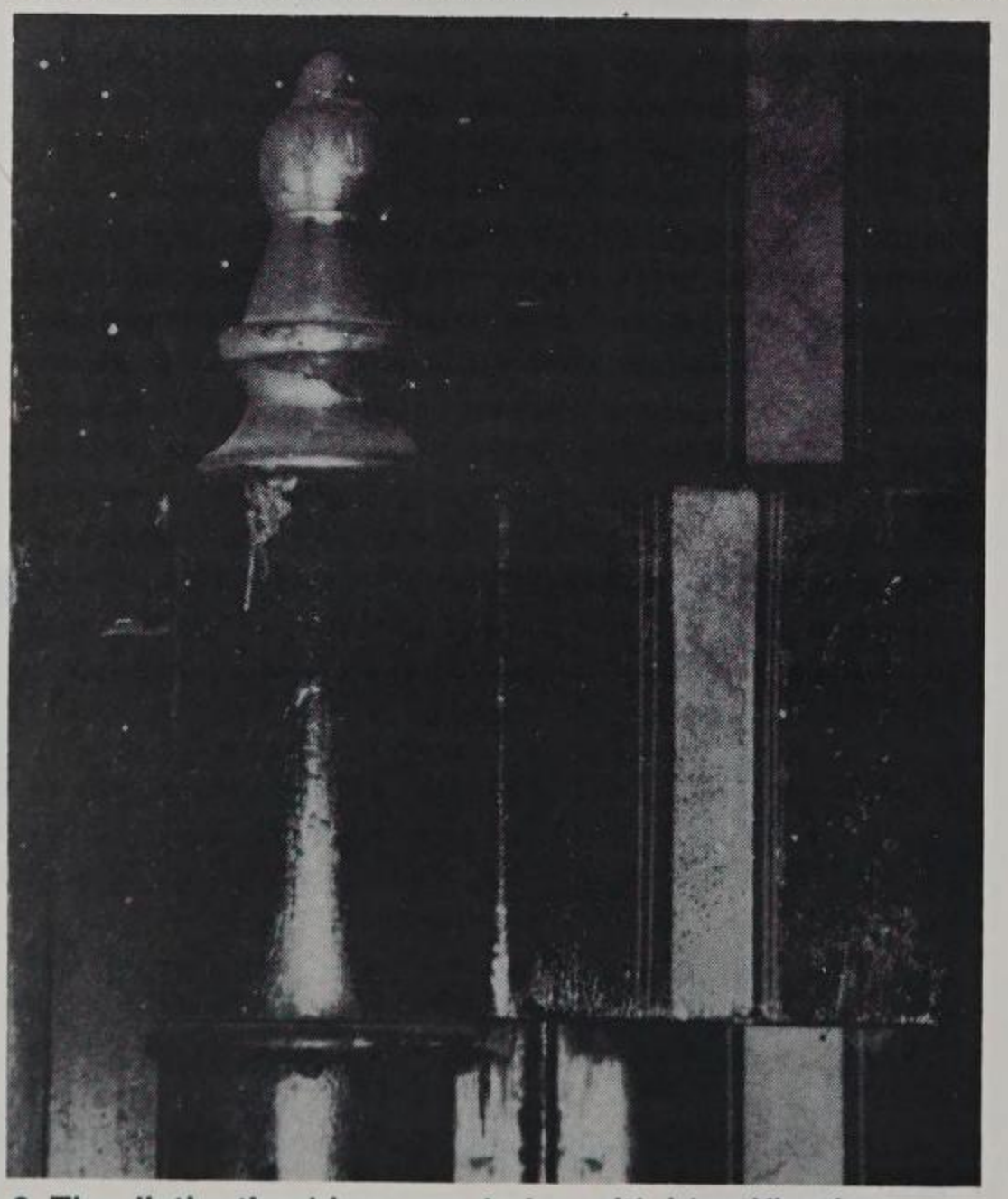


3. The dial and upside down handle.



4. A close-up of the 100# dial...

5. ...and L-handle.



6. The distinctive hinge cap helps with identification.

"How so?"

"Well, that Gary was stuck in a wall, preventing us from side or top drilling. And going through the door would have meant staring down Mr. Maxalloy."

"Gee whiz Dave, I should think that real men would welcome the opportunity to square off against a worthy opponent like Mr. Maxalloy. Didn't you take the *easy* way out by manipulating?"

"No! I took the *smart* way out. Real men will take the smart way out, whereas boys will try to be macho and get beat up by tough guys like Maxalloy and Relsom. The boys may win the war by getting through the hardplate, but they will get bloodied doing it. And if they do it too many times, they will end up either punch-drunk or singing 'The Green Green Grass of Home.'"

"Very funny, but I probably made more off that song than you will off this opening. But my point is just to hold you to what you said, and you said that real men don't manipulate."

"You're right, Tom, I misspoke. What I meant to say and should have said is that real men don't manipulate a safe that can be drilled open with a 1/8" hole in under ten minutes."

"Are you serious? You can open this vault door with an eighth inch hole in less than ten minutes?"

"Yup. Before Dunckel or Eckert or Shearer could even get their wires and pointers and gadgets set up for manipulating a Hall's lock, I'll have it drilled open with a hole the diameter of a spaghetti noodle. Yessiree, that's what separates the men from the boys. Men drill open safes; boys play tiddley-winks and manipulate."

"But, but. . . "

"Shall we begin?"

"Sure Dave, but what about the hardplate?"

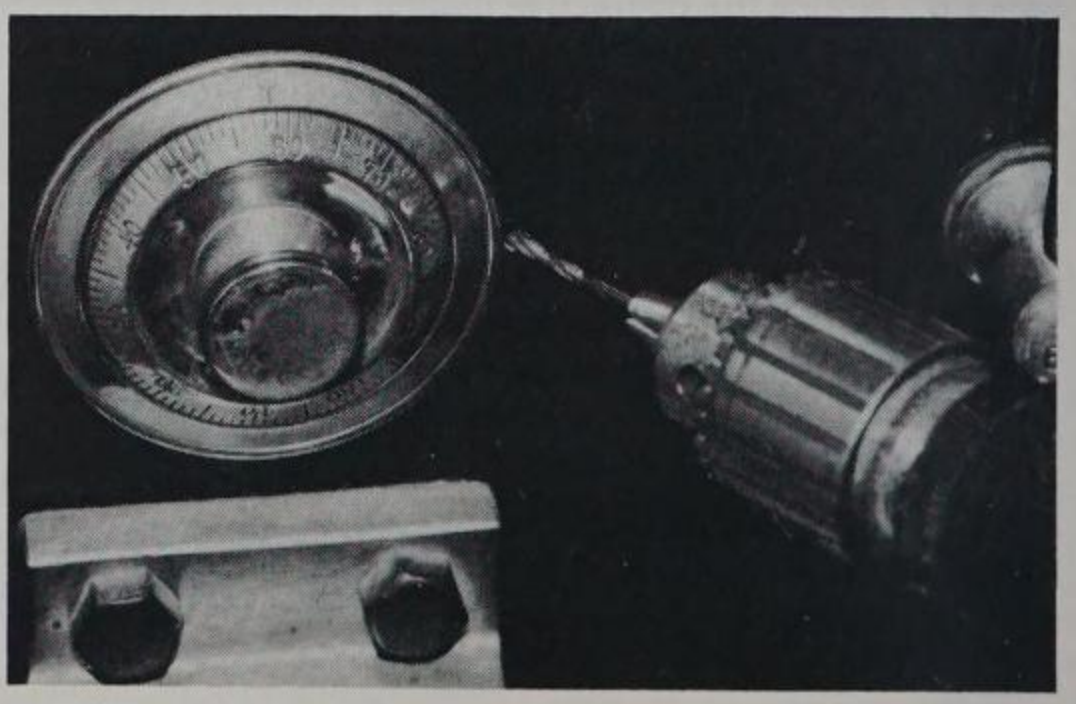
"There ain't none."

"Cool."

To verify the lock, I put a little pressure on the handle while rotating the dial. The severe bind in the dial told me that this was the expected straight-tailpiece lock. Normally, drop-in (the location of the fence or tailpiece) on a straight-tailpiece lock is 75. But remember, this is a left-hand door, so the lock will be mounted LH rather than RH. That means drop-in will be at 25.

The plan was to drill in at an angle from just outside the dial ring at about 24. This would allow us to see the wheels and just enough of the tailpiece to line up the wheel gates without having to transfer numbers. Photograph seven shows us doing just that. Notice how steep the angle is. That is because there isn't much more than about a half inch between us and the lock.

In previous years I would have used a 1/4" bit and angled in at zero. Then I would have lined up the wheel



7. Drilling in at a steep angle to see the wheels.

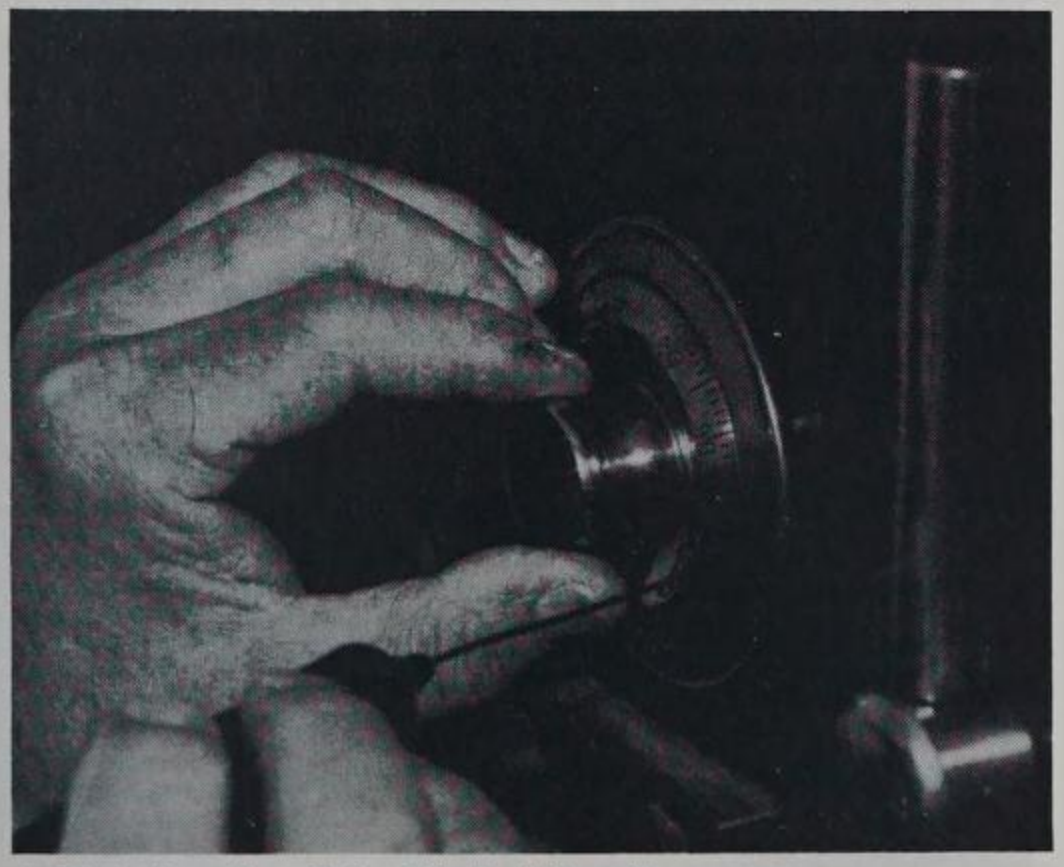
gates through the hole and had to transfer them over to drop-in. I hate doing that unless absolutely necessary, and this revised technique makes it so I don't have to. Neither do you.

Going nice and slow, so to avoid (or at least minimize) the chances of breaking the 1/8" bit off, penetration took almost two minutes. The time to be especially careful when using such a small bit is when you are breaking through. Take it slow and easy.

Once the hole was completed, it was time to have a look—see. I inserted my mini-scope into the hole, and uttered my patented phrase "right on the money." The wheels could be seen, as could the tailpiece, just as planned. I handed the scope to Tom, and he is taking a peek in photograph eight.

8. Tom peeking in to see the wheels and tailpiece.

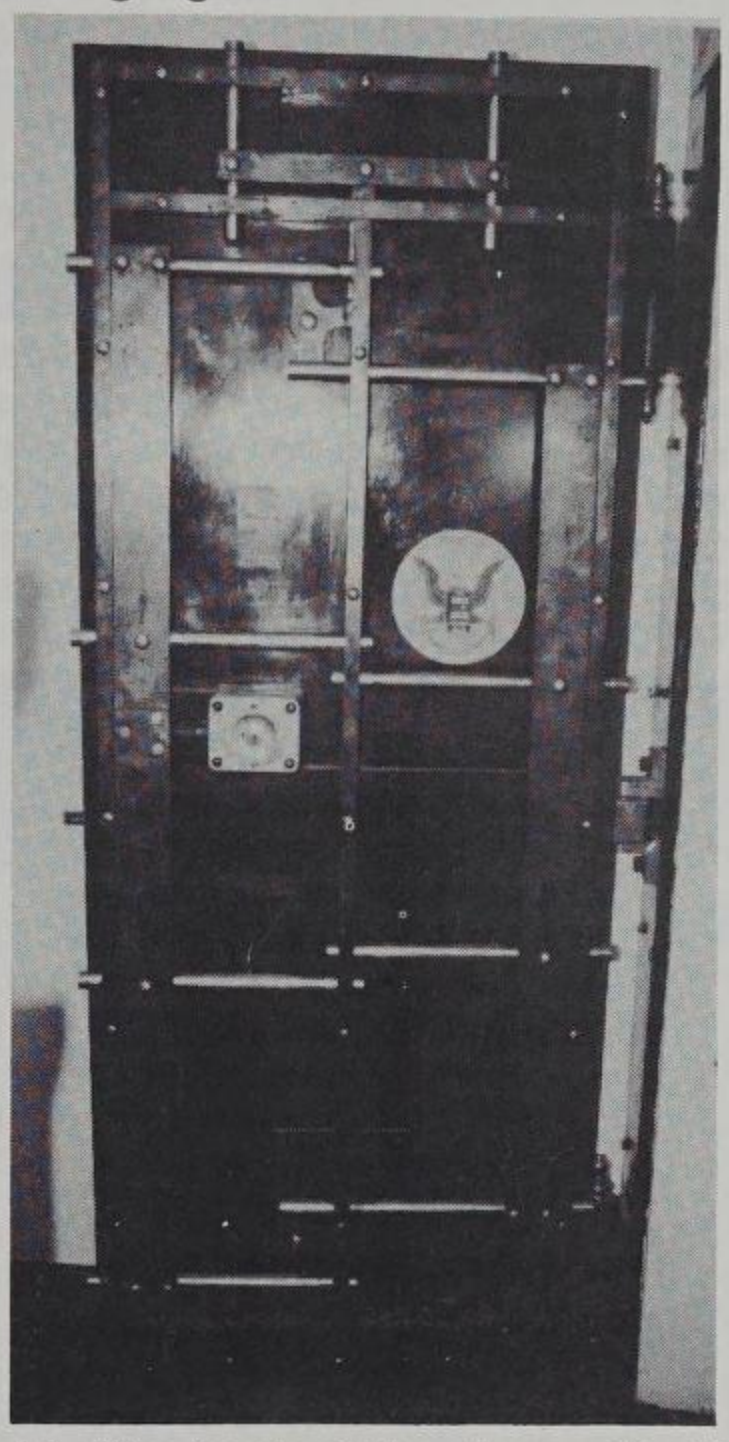
In photograph nine, we have zoomed in for a close-up. Tom is rotating the dial with his left hand while holding the scope with his right. Notice how thin the scope is. This small diameter opens up a whole range of opening options that are impossible without such a small scope. The only source that I know of for these tiny scopes is Lockmasters, who has since discontinued the line and will offer it as long as supplies last. However, I am sure there are other suppliers out there and when I find one, I'll let you know.



9. Rotating the dial while holding the scope.

Anyway, it was a simple matter of lining up the wheel gates with the straight tailpiece, and she was open.

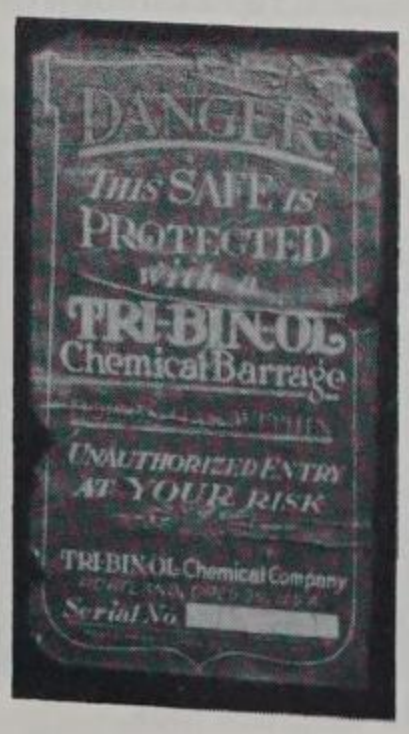
Photograph 10 shows the back of the door. As you can see, there are 12 locking bolts; four on each side and two top and bottom. Notice the two decals on the door; that is where we are going next.



10. The back of the door with 12 locking bolts.

Photograph 11 gives us a warning: "DANGER! This safe is protected with TRI-BIN-OL Chemical Barrage. Poison gas within. Unauthorized entry at your own risk. Tribinol Chemical Co., Portland Oregon."

Whatever poisonous chemicals were once installed had long since been removed. Thank goodness. But the thing that cracks me up is where the decal was installed—on the *inside* of the door! How the heck was a prospective bunglar supposed to see the warning? After all, if he doesn't read the warning, he won't be deterred. I saw no sign of a decal ever having been on the outside of the door; no glue



11. One of the warning labels found on the back door of the safe, stating that the safe contains poison gas.

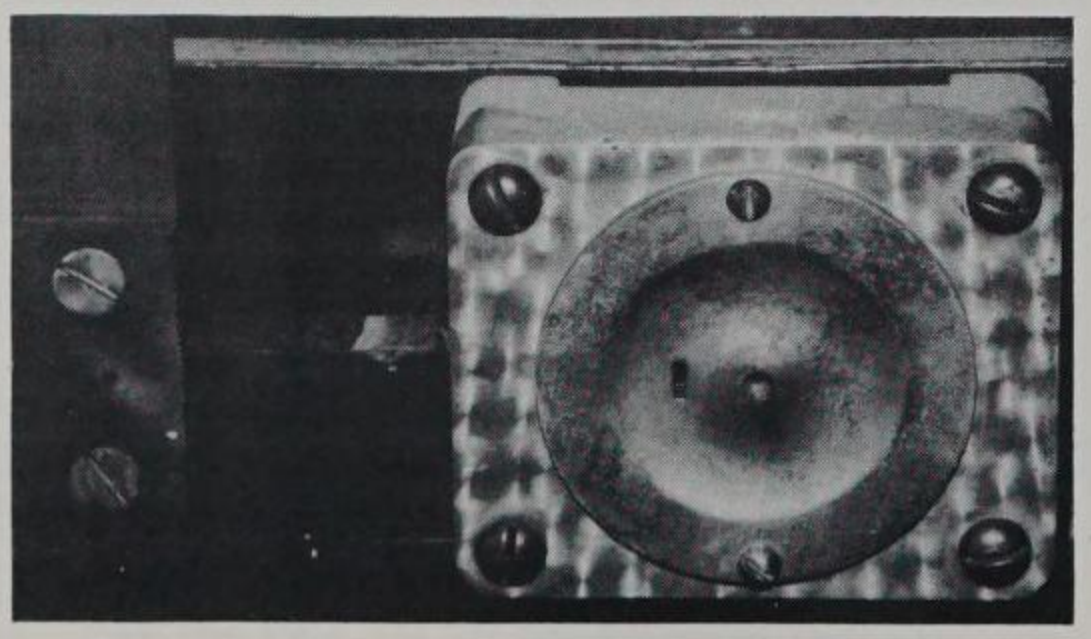
marks, no paper remnants, no nothing. Figure that out.

Photograph 12 shows the infamous Hall's Safe Company logo. (Hey, what's the difference between being "famous" and being "infamous"?) It says "Not Hall's Safe & Lock Co., which quit business in 1892." It is a long story, but the gist of it is that Hall's sold out to and became part of Herring-Hall-Marvin in 1892. When the Hall's grandchildren started making safes and using the Hall's name, Herring-Hall-Marvin sued, and the case made it clear to the United States Supreme Court. The Court ordered them to put a disclaimer on every piece of stationery, envelope, and of course on every safe, to the effect that they were not in any way connected with the Hall's Safe & Lock Company. It was not exactly true; the designs were very nearly identical, but the law was satisfied. (For the long version of this story, see my article in the August, 1987 issue of TNL; or for those of you who have my *Safe Opening Articles Vol. II,* see pg. 8).

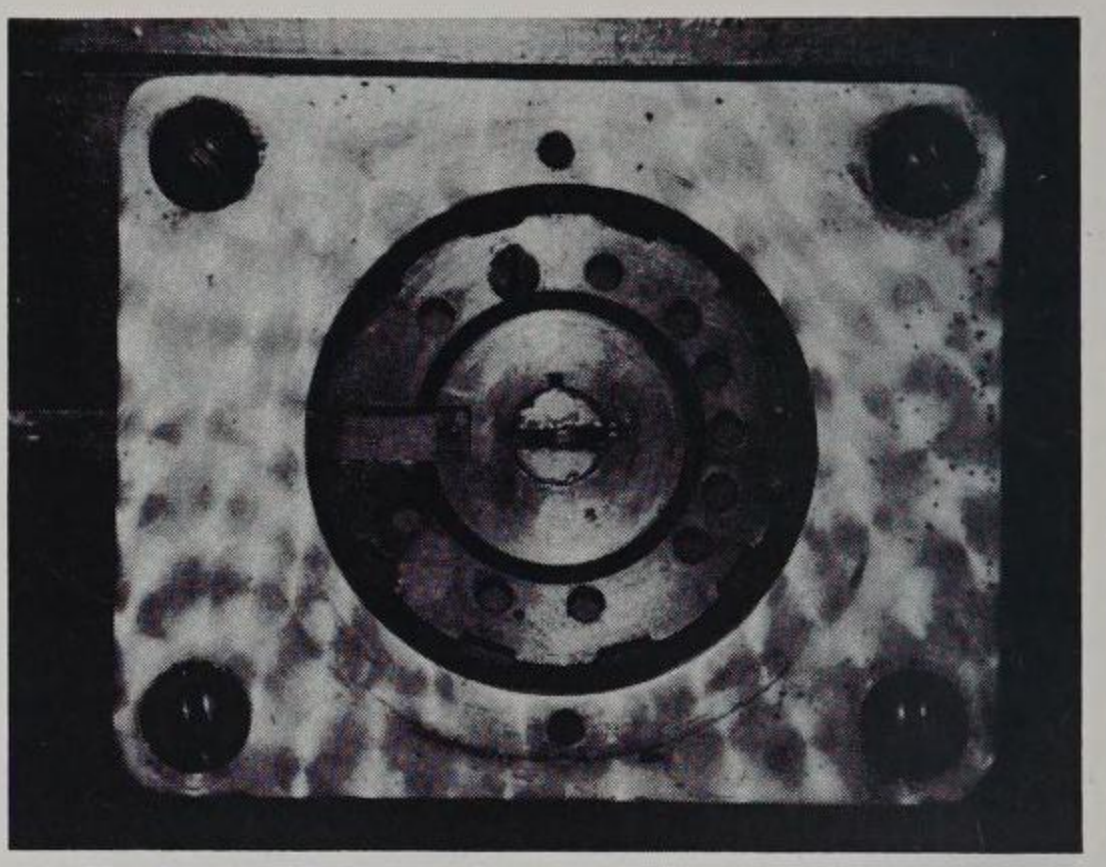
12. The Hall's Safe Co. logo

In photograph 13 we have the LH mounted Hall's straight tailpiece lock. The tailpiece is the steel bar just to the left of the lock. When the combination is properly dialed, the steel bar can enter the wheel gates as the boltwork is retracted. Notice the slot in the back cover of the wheel curb. This slot just happens to be right at drop-in. So, if you have a flat steel key just the right size, you can "feel out" an unknown combination right through the slot.

Photograph 14 shows the lock with the curb removed.



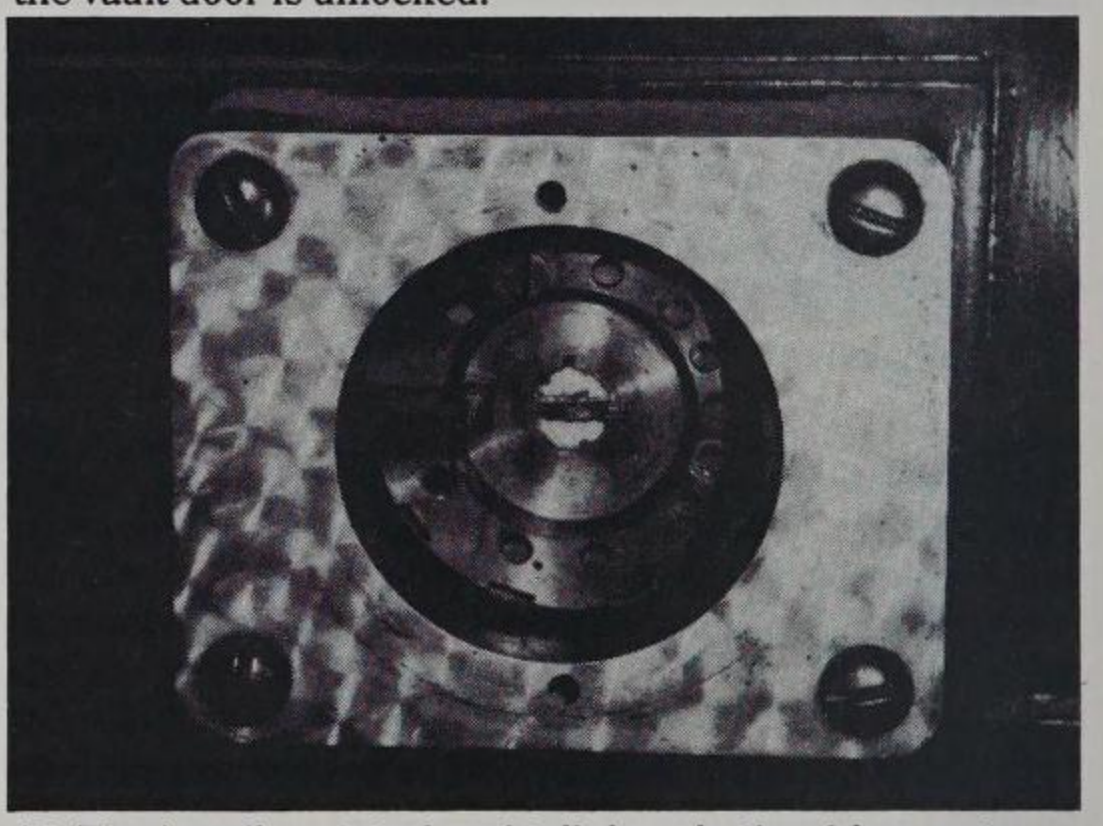
13. The LH mounted straight tailpiece lock.



14. The lock with the curb removed.

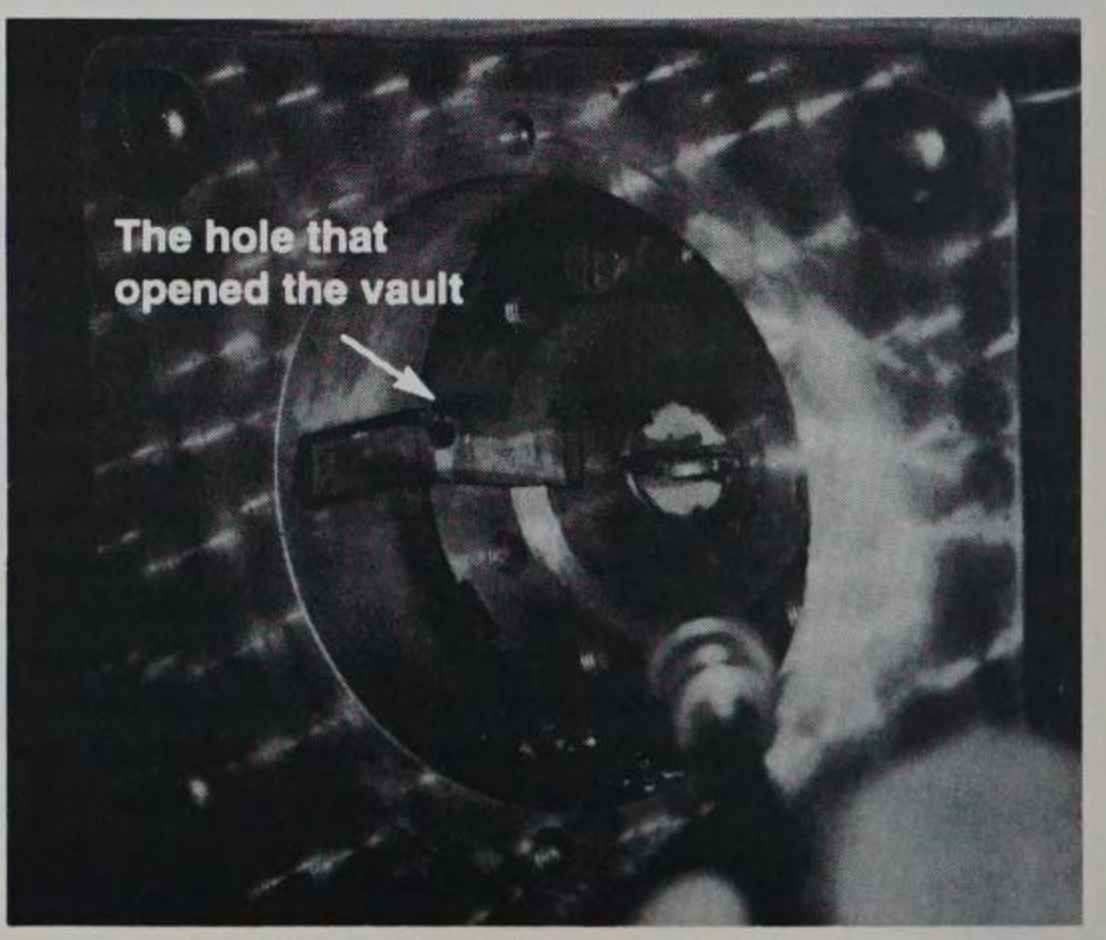
The gate in the driver is lined up with the tailpiece, but the handle has not yet been rotated. Notice there are nine false gates around the driver.

In photograph 15 the handle has been rotated, causing the tailpiece to enter the gate in the driver. In this position, the vault door is unlocked.



15. The handle rotated and tailpiece in the driver gate.

Photograph 16 shows the prize-winning 1/8" hole that opened the vault. Notice that it is placed at the top of the

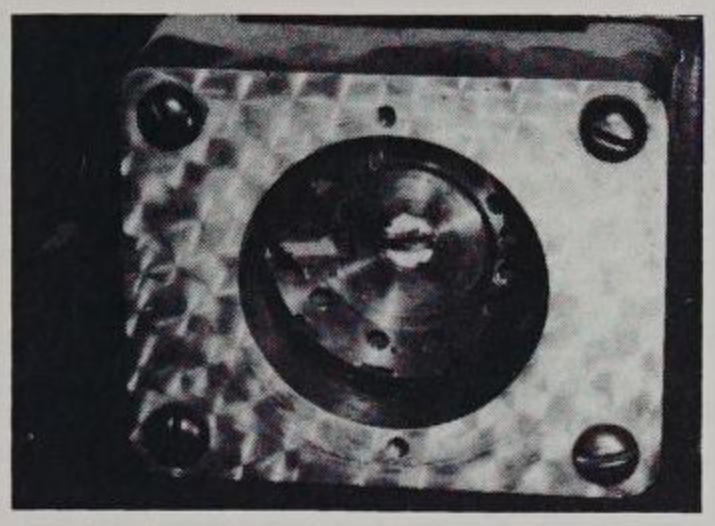


16. The hole that opened the vault. Note placement.

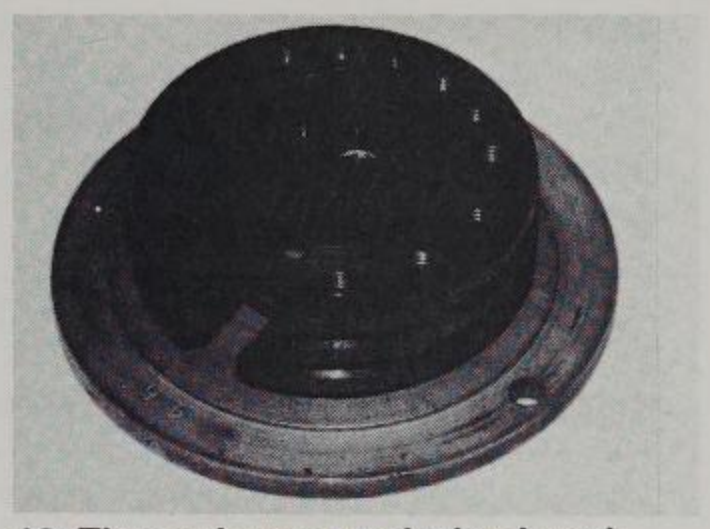
tailpiece. (If it had been right on the tailpiece, it would have been extremely difficult to see the wheels).

In photograph 17 we see a drill bit sticking through the hole. This gives us a pretty good idea of the angle used. I have to admit to not being sure what people mean when they say, for example, "angle in at 30 degrees." When you drill straight in, is that considered 90 degrees or O degrees? In other words, does "angle in at 30 degrees" mean that you start counting from the flat face of the door outward? (in which case drilling straight in would be 90 degrees). If so, then this angle looks to me to be about 55 degrees. Any other guesses?

Photograph 18 gives us a good look at the curb-mounted wheel pack. There are three 2-3/8" diameter screw-change wheels.



17. Angled drill bit sticking in the hole.



18. The curb-mounted wheel pack.

While I was servicing the lock and setting a combination, Tom partially tapped the drilled hole, threaded in a hardened screw, and then torqued it in past the threads to ensure its staying put. We ground the head off, and the evidence of penetration was nearly invisible without a microscope. A job well done. And a bill well paid.

Later that evening, while we were roasting marshmallows over an open fire, one of the kids wondered if Garth Brooks might be changing jobs soon, that it sure would be fun to open a safe for him. Gazing out over the endless ocean, I smiled in agreement. It sure would, even if Nashville doesn't have a seashore.

See ya next month. §

When opening safes gets boring, the one thing that makes it fun is trying slick opening techniques. Some people scoff, but opening safes with tiny holes has made it fun again for me. Tiny holes + tiny scopes = huge self reward.

by Dave McOmie

Opening A Fort Knox

"The customer had not opened the safe for some time, and not surprisingly, she had lost the combination."

It never ceases to amaze me when *maximal* amounts of money and valuables are kept in safes that provide *minimal* protection. Cheap fire safes used to be the norm, but over the last 10 years gun safes have become increasingly popular with homeowners who wish a safekeeping for their life savings. Sometimes this occurs as the result of a blissfully ignorant hardware store employee recommending "this here top-of-the-line super-duper indestructible" safe, often without even a clue as to how the safe will be used. Other times this occurs as the result of a customer's reluctance to make the proper investment. I can't count the number of times I have seen cheap fire safes orgun safes that have been burglarized to the horror of the homeowner. And almost every time the burglarees (not the burglars) express shock because they thought their safe was "burglar-proof."

How we can ever solve this problem I haven't a clue. But I do know that we need to keep on doing what we have always done, which is to keep on talking, to continue to inform people on the risk of relying on a fire safe or gun safe for serious burglary protection.

Sometimes actions speak louder than words. On a recent gun safe opening I scared the heck out of a lady who was keeping valuables (in the high 5-figure range) in a gun safe. See photograph one for a look at the safe .

The customer had not opened the safe for quite some time, and had, unsurprisingly, lost the combination. My first plan of attack was to run quickly around the dial to see if a number would jump out at me. If not, then there was no time to waste on this safe. After two or three minutes, with the aid of the cheapest and best manipulation aid on the market (a Lockmaster's hairline index) I could tell that this lock would require a serious sit-down attempt at manipulation in order to get it open. (*See the handle, dial and hairline index in photograph 2.*) No gun safe warrants that kind of time investment, so I opened up my tool kit and prepared to drill, when the customer asked, "Oh no, do *you have* to drill it?"

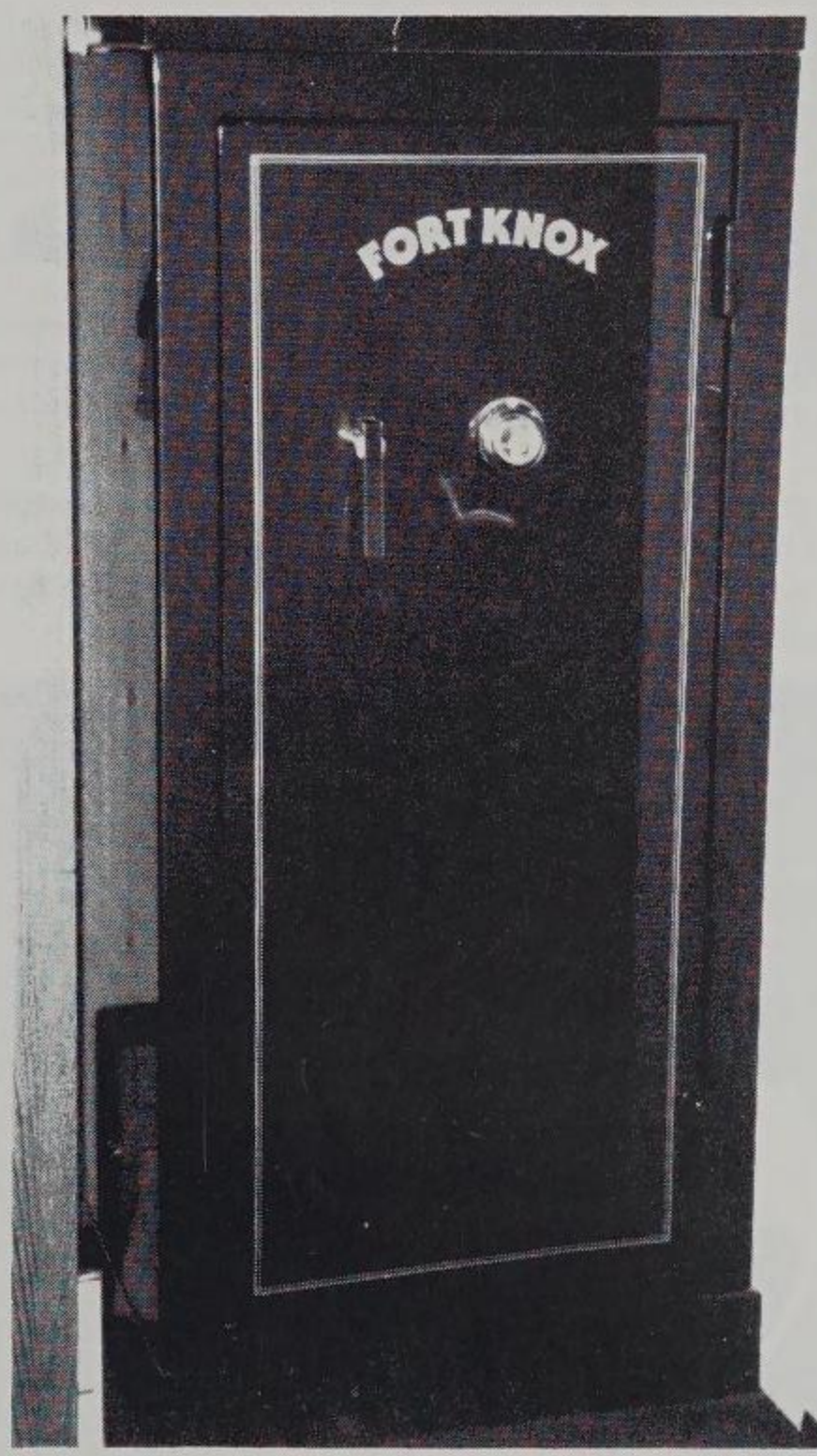
"No, I don't *have* to drill it, but I cannot justify spending any more time trying to manipulate a safe that can be drilled open in a relatively short amount of time. If you *insist* that I manipulate it, then the flat rate quote I gave you is null and void."

"No no no, I don't want to pay more than you quoted me. I am just concerned that drilling will ruin my safe.

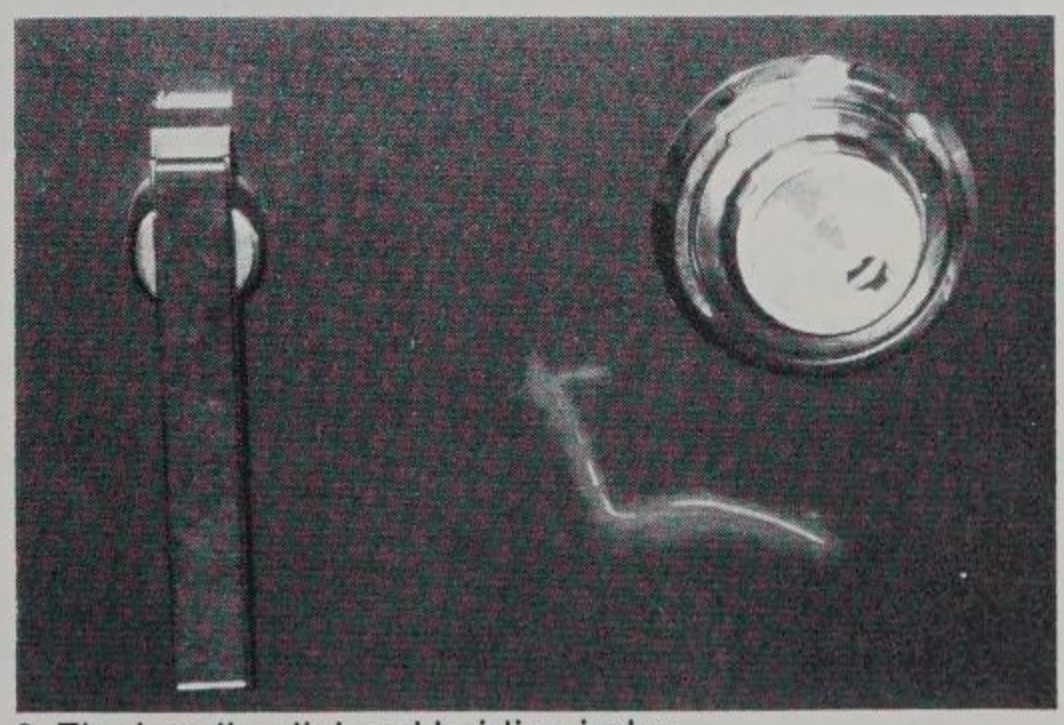
"Drilling will *not* ruin your safe. I promise. I will drill a tiny 3/16" hole that will not even be visible when the job is done. I promise."

"Well, all right. But how long will this take?"

"To drill it open, about as long as this conversation has been going on. To do the repair a bit longer."



1. The Fort Knox gun safe.



2. The handle, dial and hairline index.

"WHAT?!?!? We have been talking for only a couple of minutes. My safe can't be cracked that fast, can it?"

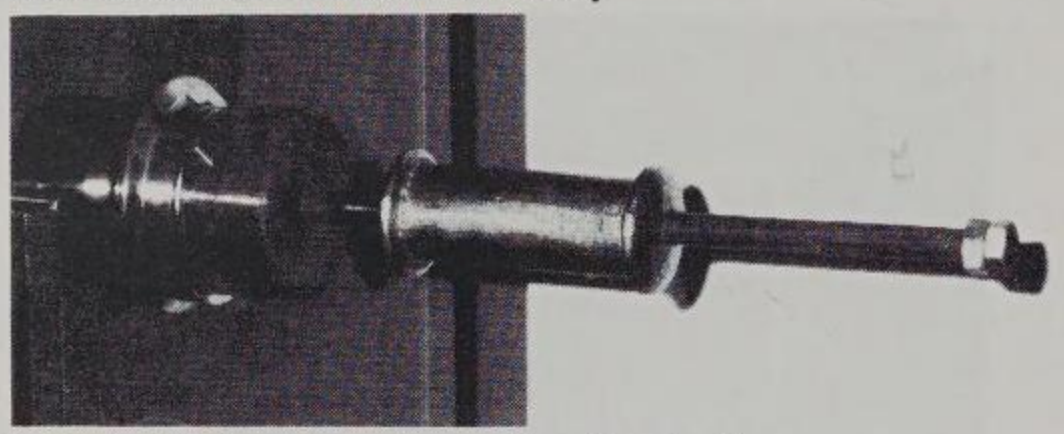
"By a professional who has the proper equipment and knowledge, yes. By a burglar who possesses little equipment and even less knowledge, it would take a bit longer and require a lot more damage."

"How much longer?"

"With a sledgehammer and pry bar, perhaps 10 or 15 minutes. With power cutting tools, less."

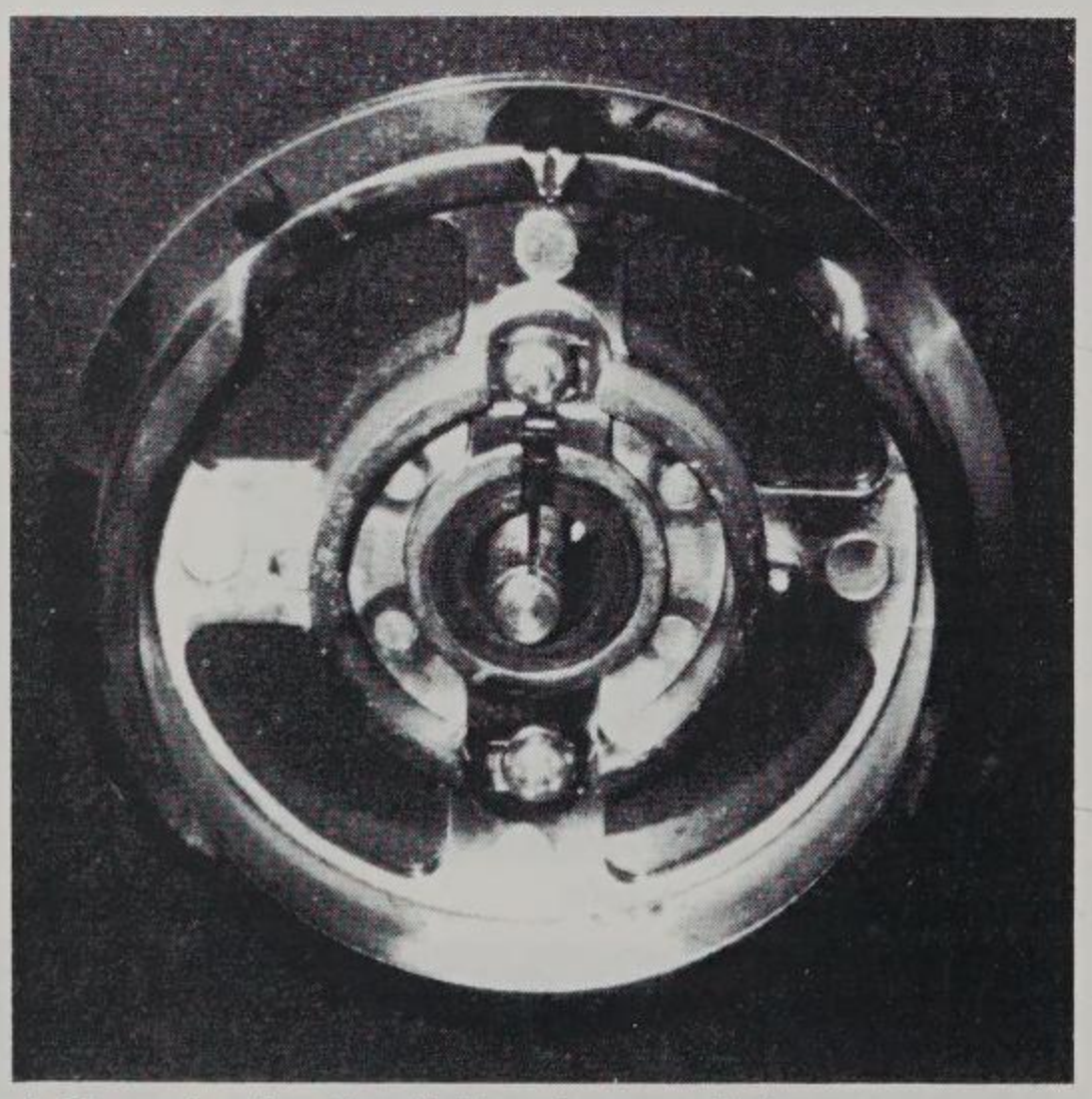
"Oh my God. Everything we own is in that safe."

I let the conversation dangle right there. I attached the Lockmasters dial puller to the dial (*see photograph 3*) and with two slams the dial was history.



3. Dial with Lockmaster puller attached.

Photograph four shows what it looks like after the spy proof dial has been pulled. The spy proof dial ring is held on with two screws, and in the very center of the ring we can see the spindle sticking out.



4. The safe after the dial has been pulled.

Without even measuring or center-punching (which violates my own protocol) I poked a hole at approximately 72 x 7/8." With a penlight I peeked in the hole, lined up the wheel gates under the fence, and retracted the lockbolt.

"It's open ma'am. All you have to do is rotate the handle. I'll let you do that so you can get at the contents of the safe while I pack up my tools."

The poor lady was speechless and incredulous. She just stared at the safe, then at me, and said, "I had no idea it was that easy. "

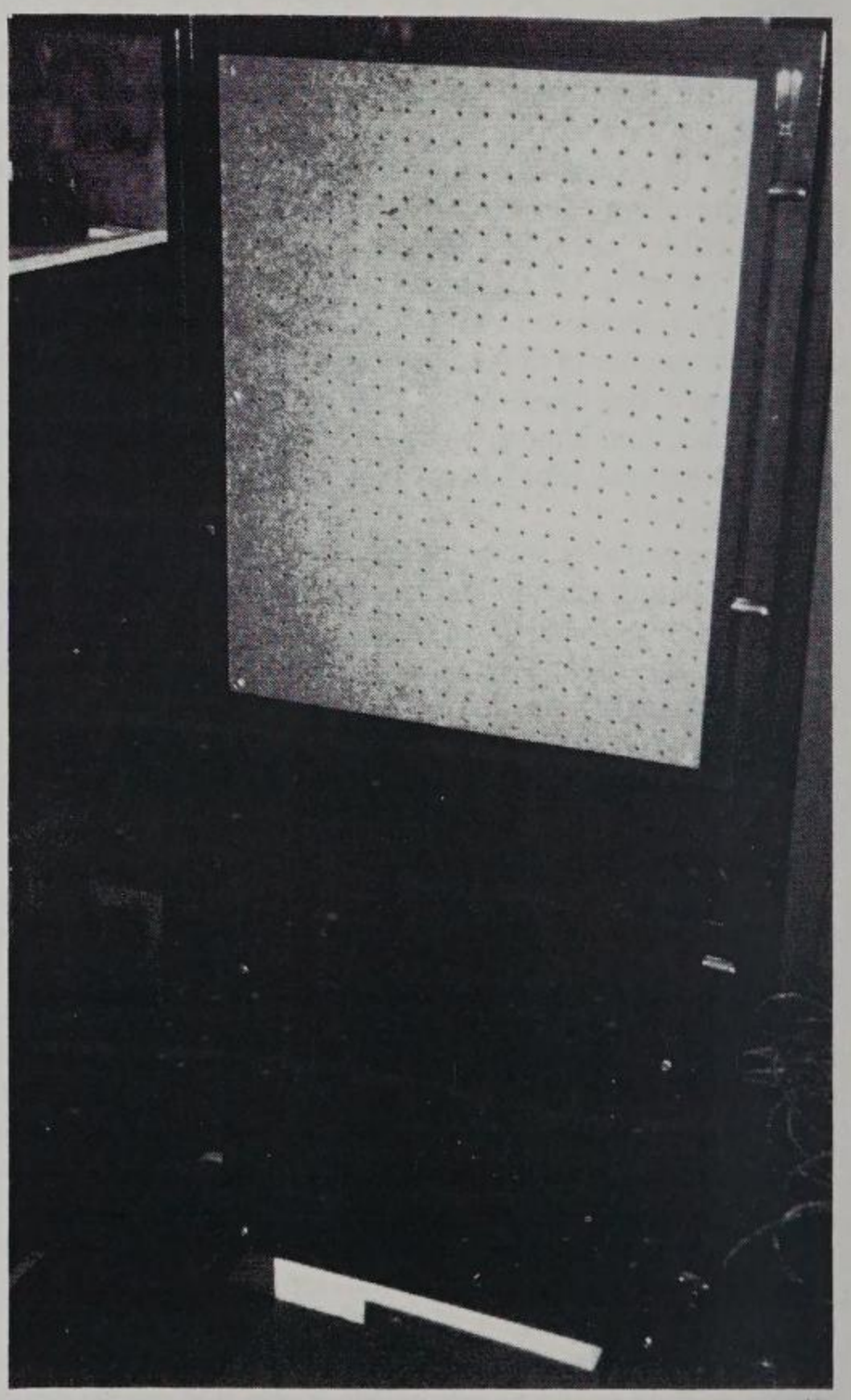
"Ma'am, it's not all that easy for a non-professional."

"But you said a burglar could open this safe, didn't you?"

"Yes, I did. The truth is, ma'am, that I have seen lots of successful burglaries on safes that just don't offer much in the way of burglary protection. A gun safe will keep out curious relatives, and it will keep out a good portion of juvenile delinquents whose only tools seems to consist of a screwdriver and claw-hammer. But it will not keep out the burglar who comes to the job with heavier crude tools."

She slowly stepped up to the safe, rotated the handle and opened the door. Then she removed a box from the top shelf and walked out of the room, down the hallway and into another room.

Photograph five shows the inside of the door with back panels still attached. I say "panels" because there are two; an upper cork-board panel, and lower metal panel.



5. The inside of the door with back panels attached.

As I was removing the screws from the cork-board panel, she came back into the room and asked, "how much would you keep in a safe like this?"

"To be honest with you, ma'am, I would use a gun safe only for its intended purpose...to keep curious fingers away from guns, etc."

"Okay, but how much would you recommend that someone who *does* own one keep in it?"

I removed the cork-board panel, exposing the upper two

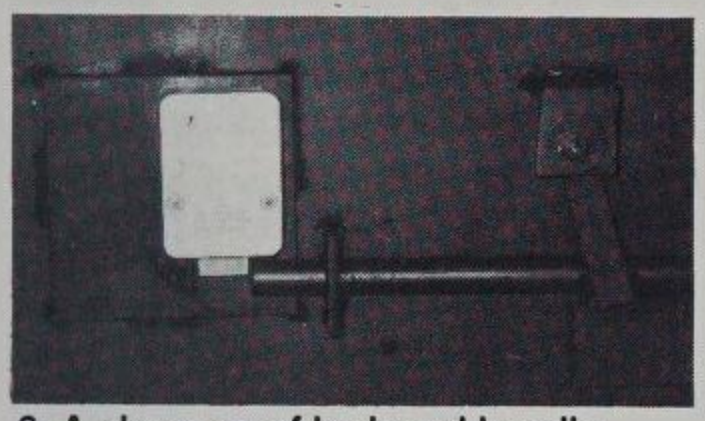
locking bolts and the combination lock. "Do you mean like a *maximum* amount?"

"Yes. What would be the *most you* would recommend keeping in here?"

As I zoomed in for a close-up of the lock and the inside handle assembly (*see photograph 6*), I ran some quick calculations in my head and said, "a few thousand."

She gasped. "My goodness, there is more than that in the tiny little box on the second shelf.

When she told me the approximate value of the entire contents, I gasped right back at her. "Ma'am, I don't want to

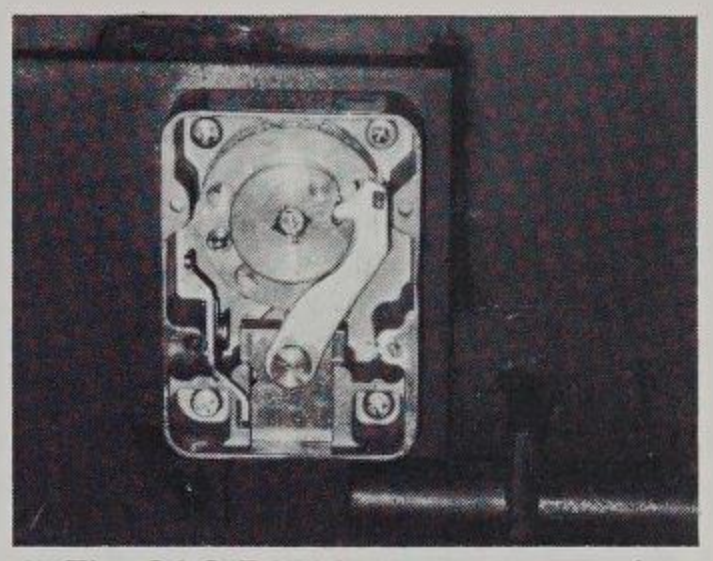


6. A close-up of lock and handle.

right back at her. "Ma'am, I don't want to be back here some day in the future after you and your husband have been hit. I really hate saying 'I told you so.' But if you and he don't buy a *burglary* safe, a safe designed to keep burglars at bay, then you are courting disaster. Good grief, you have enough in there to buy a good quality TL-30, or even better a TL-30x6, and not even notice the difference. Please, do us all a favor and at least go shopping. Look, I am not trying to sell you something you don't need. As a matter of fact I don't even sell safes, I just open them.

I gave her the names of three prominent safe dealers and told her to tell them that I said to treat her well. I also assured her that there were no kickbacks involved. Geez, people are paranoid!

I removed the back cover of the vertically down mounted Sargent & Greenleaf R6730. (*See photograph 7.*) There is no external relocker on this safe, but there is an internal relocker inside the case of the combination lock.



7. The S&G R6730, cover removed.

We continued our chat while I repaired the hole, serviced the lock, and set a new (easy-to-remember) combination. I made her promise me that she and her husband would at least go to a couple of shops and look.

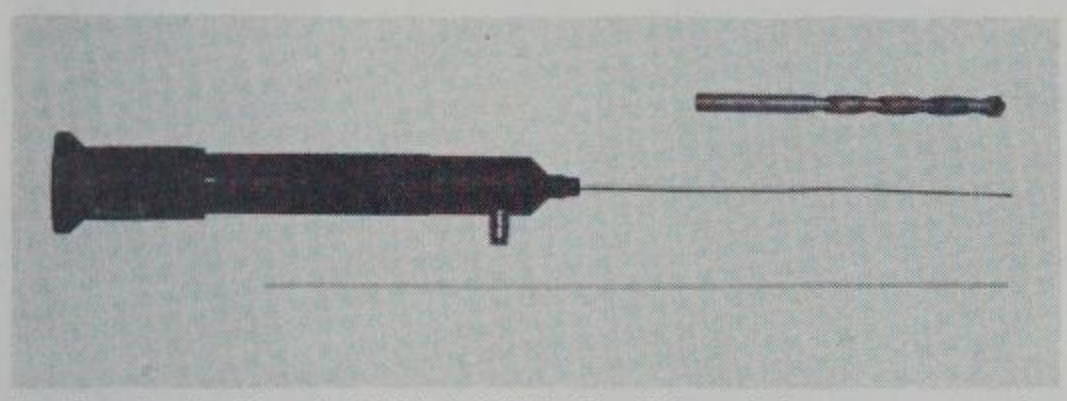
Fort Knox makes a good gun safe. I simply told the customer to use it for its intended purpose. §

by Dave Mc Omie

POPSICLES AND THE FIRE SAFE

"The most recent victim of my 'noodle attack' was the Safe Cabinet Laboratories fire safe."

Scopes are spoiling me. I bought one of those tiny little spaghetti noodle scopes from Lockmasters, and opening safes has become fun again! In photograph one we have, from top to bottom, a 1/4" drill bit, the flexible mini-scope, and a Mission brand, angel hair spaghetti noodle. Only a micrometer knows for sure which is larger between the scope and the noodle. (Lockmasters has discontinued this scope. Maybe if enough of us pester them, they will reconsider).



1. (Top to bottom): 1/4" drill bit, flexible mini-scope, angel hair spaghetti noodle.

The most recent victim of my "noodle attack" was the Safe Cabinet Laboratories fire safe shown in photograph two. The owners had lost the combination sometime during the Bay of Pigs fiasco (no kidding), and for the last 30 years had been using the safe with the dial taped in the open position. This was okay, since only paper records were stored in the safe. Nothing any burglar would want. But not all safebreakers are burglars.

Enter the grandchildren.

Young Jessica, age 4, was at the store visiting grandpa and grandma, when she spotted the dial on the store safe. When she tried to turn it, it, of course, wouldn't budge. But Jessica wasn't the least bit intimidated. With dogged determination, she dug and tore at the tape with little fingernails and a popsicle stick.

Finally it came loose. Grandma saw what was happening... .a half second too late. Grandma shouted "don't touch that!" obviously forgetting that to a 4-year-old, that means "touch, wiggle and twist as fast as possible!" Little Jessie turned and her mischievous grin told grandma that the worst had happened....

When I showed up, grandma introduced me to the safe and to Jessica.

"Hi, I'm Jessica. What's your name?"

"I'm Dave."

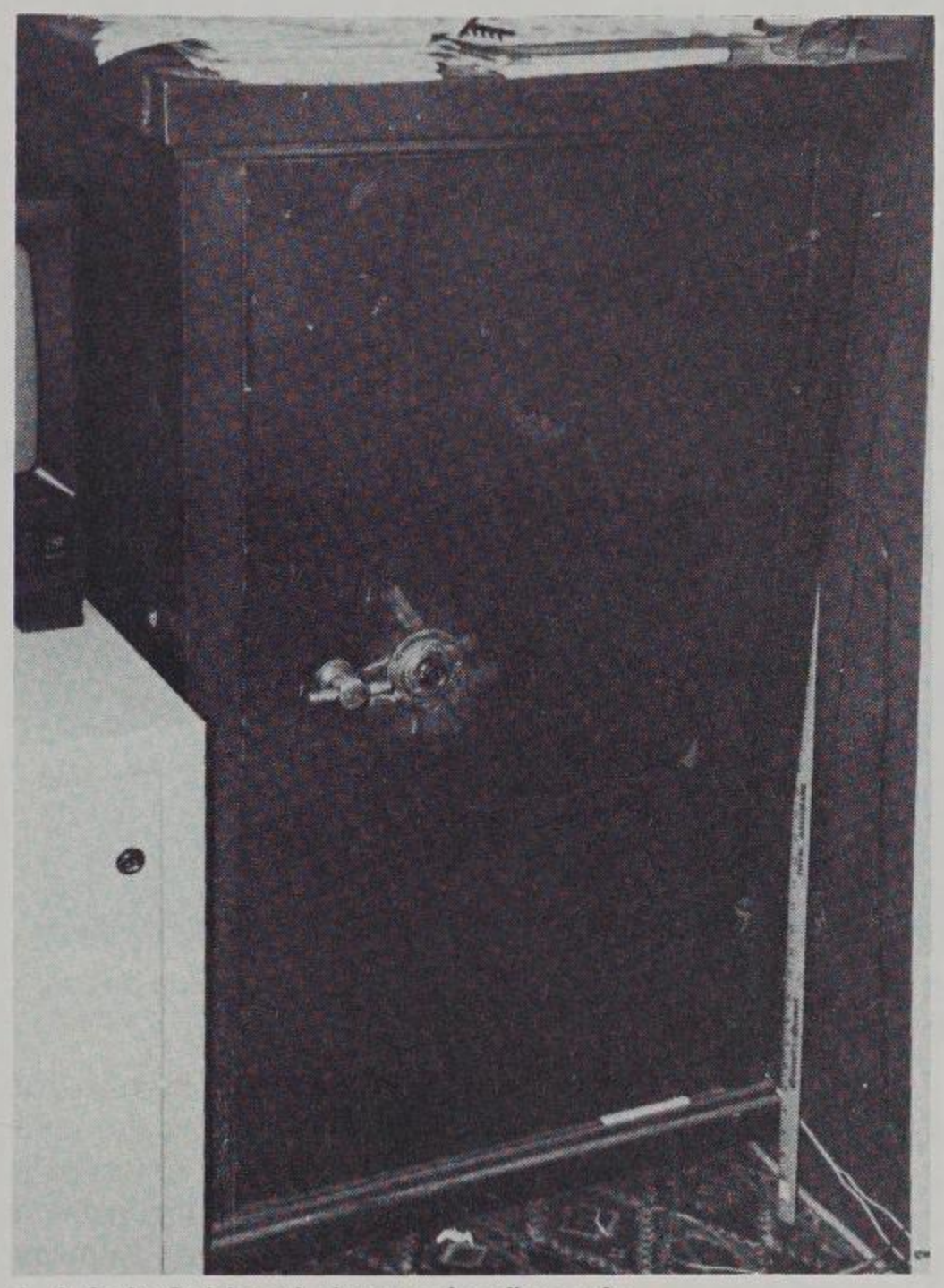
"I broke the safe. Can you fix it?"

"I don't know. How badly did you break it?"

"It's gotta be pwetty bad, cause gwamma said that I don' git no mo' popsicle today."

"Gee whiz, I'm sorry Jess. Well, let me see if I can fix this old safe.

Photograph three shows the easy way to identify the manufacturer. Notice that the label carries S&G's name as



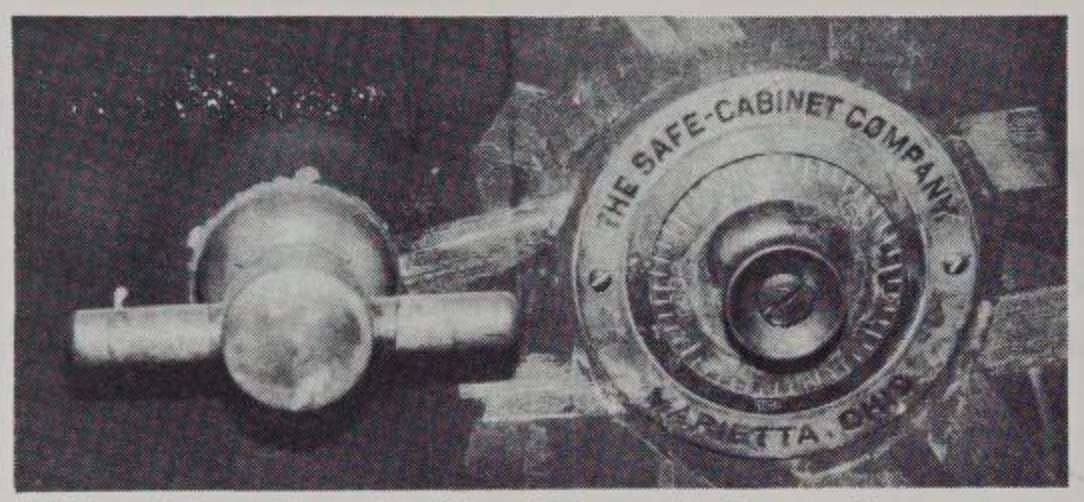
2. A Safe Cabinet Laboratories fire safe.

3. The manufacturer's label.

well as Safe Cabinet's.

Photograph four shows the easy way to identify the lock in a Safe Cabinet. You will find all sorts of locks in Safe Cabinet fire safes. Among them are the S&G C85, the S&G C87, the S&G 6730, the Yale OC-5, the Yale 0402, and the Eagle 2058. They can all be identified by either the dial, the distance from dial center to handle center, or by the contact points.

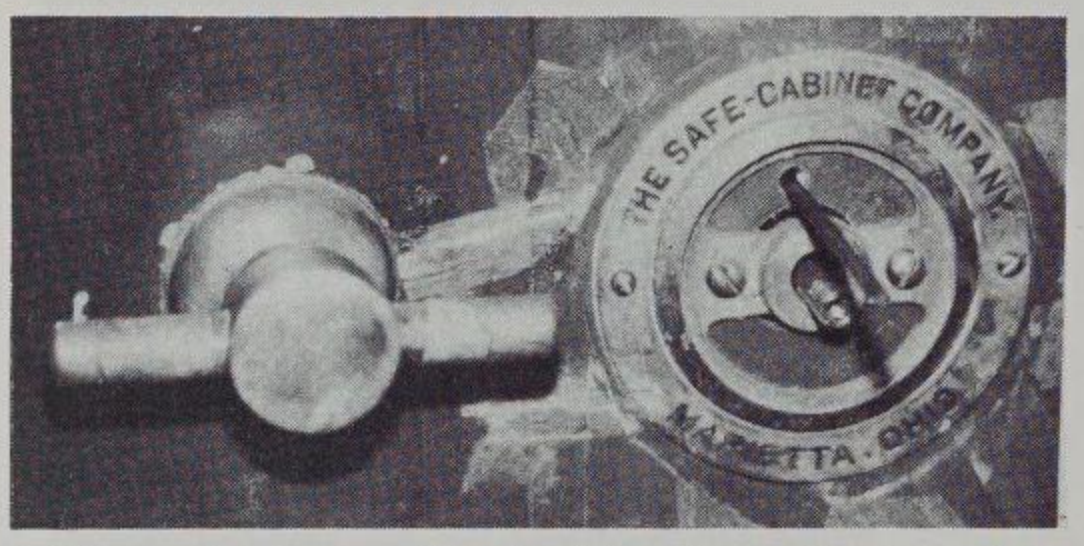
In this case, the S&G 50 number removable dial with a star for a dialing index narrows it down to one lock: the C85. This is a small lock with small wheels, and the driver is front-mounted. And like most miniature front-drive locks, it is a bit



4. The dial and handle. The distance between them can help you identify the lock.

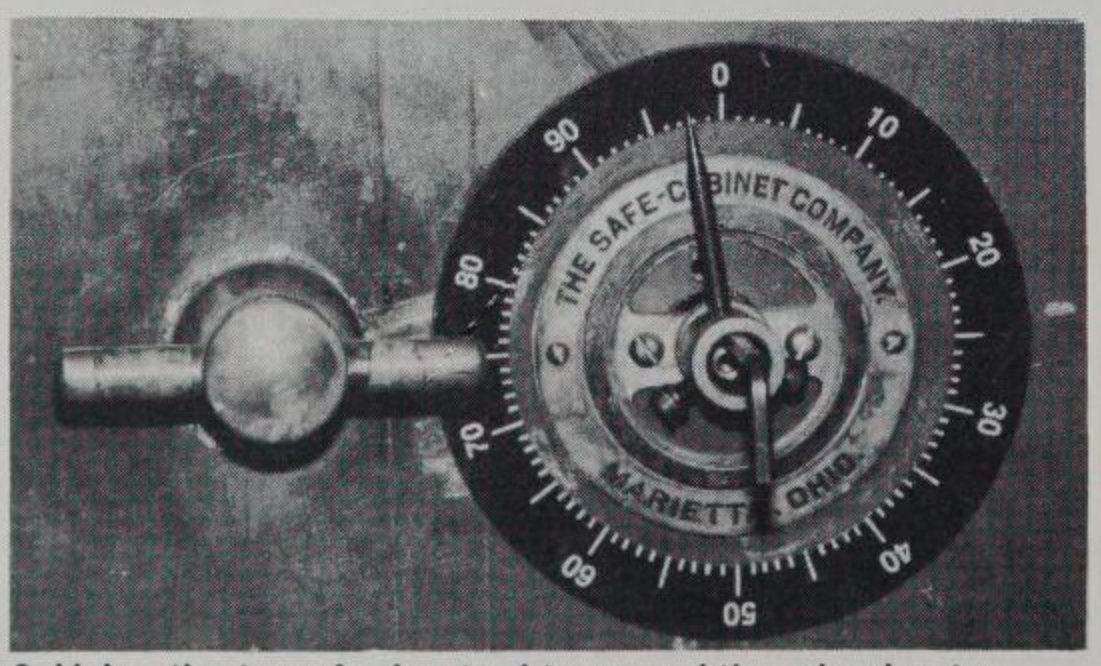
of a pain to drill open. In the past I have drilled at 5 x 3/4" for a scope hole. This time I chose to drill right at drop-in. Normally this would not be advisable, because the driver obstructs your view of the wheels behind it. But, armed with a mini-scope, I planned on peeking over the top of the driver to line the wheels up directly under the fence.

So I drilled a 5/32" hole directly at drop-in, which is at 49 x 5/8" on this lock (remember, this lock has a 50# dial). In photograph five I am using a thick wire with a hook on the end to clean the asbestos out of the drilled hole.



5. Using a thick wire with a hook to clean asbestos out of the drilled hole.

Peeking in the hole, I still couldn't see much—the asbestos just kept getting in the way. So I stuck the mini-scope in the hole to have a peek around. I was prepared to say "right on da money." But it wasn't. My hole had come in just a bit too low—all I could see was the driver. Knowing that my hole was right under the lever, all I had to do was get the wheel gates lined up directly through the hole. So, I hooked up my transferring tool to have a reliable way of recording the wheel gates. *(See photograph 6.)*



6. Using the transferring tool to record the wheel gates.

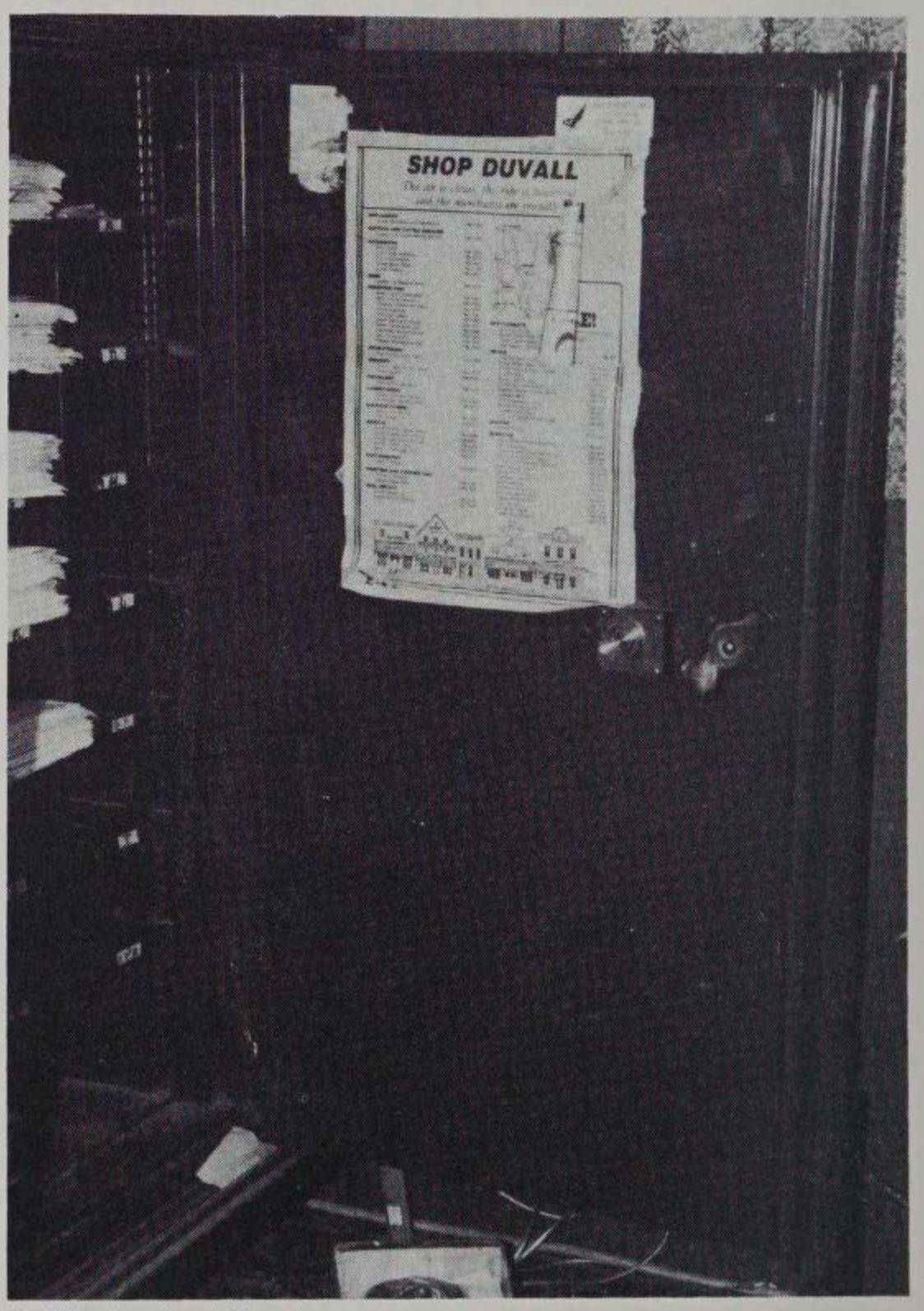
Knowing that the last turn of the dial is to the right, I turned the dial to the left four turns and stopped at 30. I then turned the dial to the right until the driver gate was in the hole. Then I could peek through the driver gate and see the number three wheel. But there was no gate. So I turned the dial back to the left and stopped at 32-1/2, then back to the right to the driver gate to have a peek for the gate on the number three wheel. As you can tell, this is a bit of a painstaking process, but it works. After about 10 minutes of rotating wheels and peeking through the driver gate to find the wheel gates, I had them all lined up. The dial was rotated back to the right and stopped at 18. The lock was open.

I turned to little Jessica and asked if she wanted to come open the big safe.

"Can I can I?!?

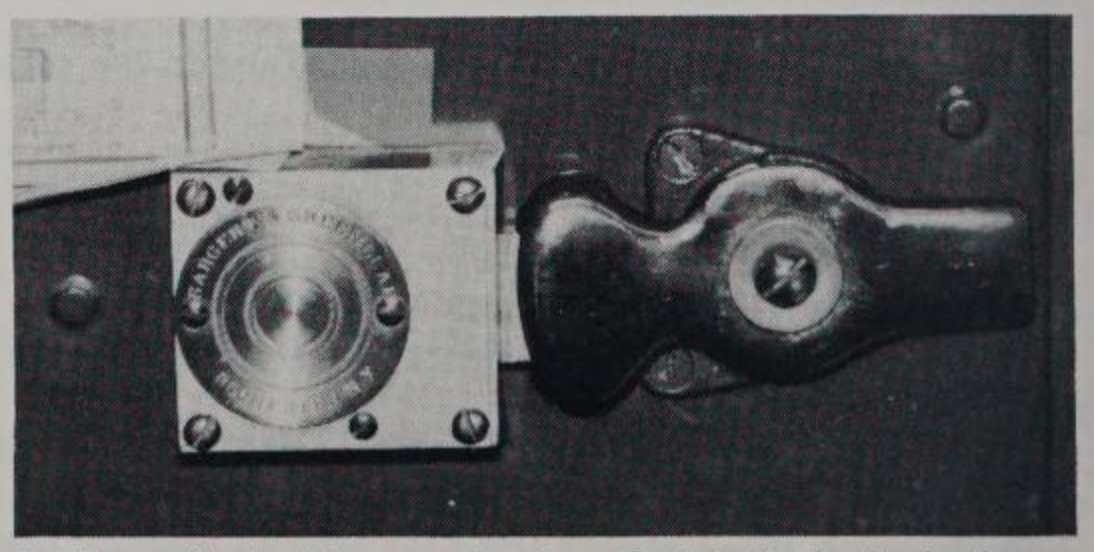
Sure!"

She cam over, gave the handle a clockwise tug, and the Safe Cabinet was open. Photograph seven shows the back of the door. As you can see, there isn't much back there.



7. The back of the door.

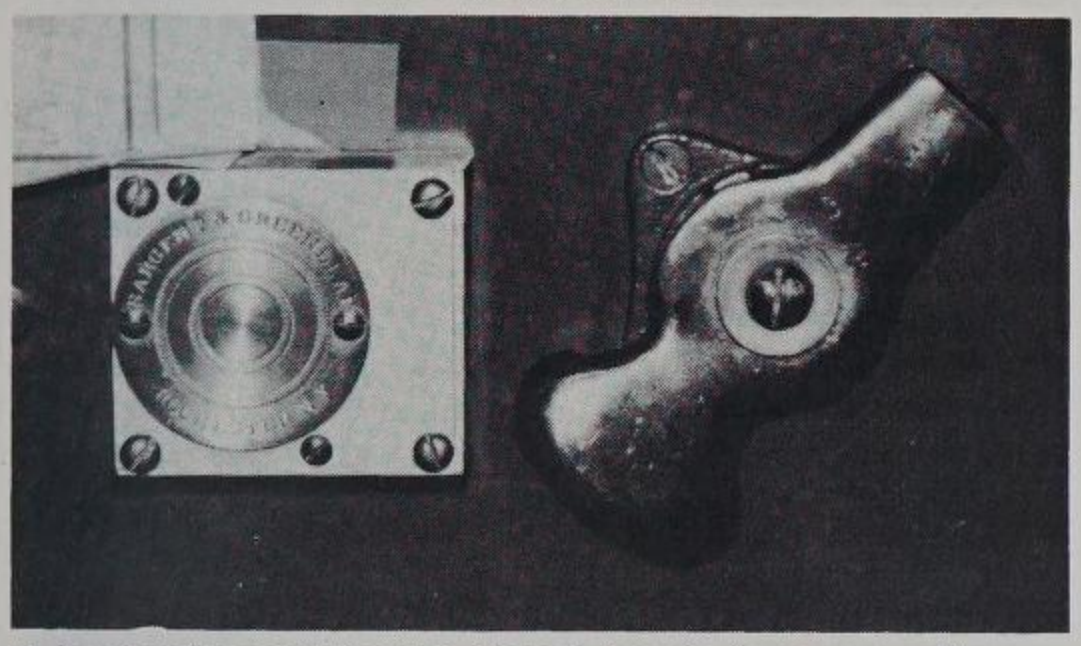
Photograph eight shows the entire locking mechanism. It consists of an S&G C85 combination lock and a thin locking



8. The entire locking mechanism. Safe is in the locked position.

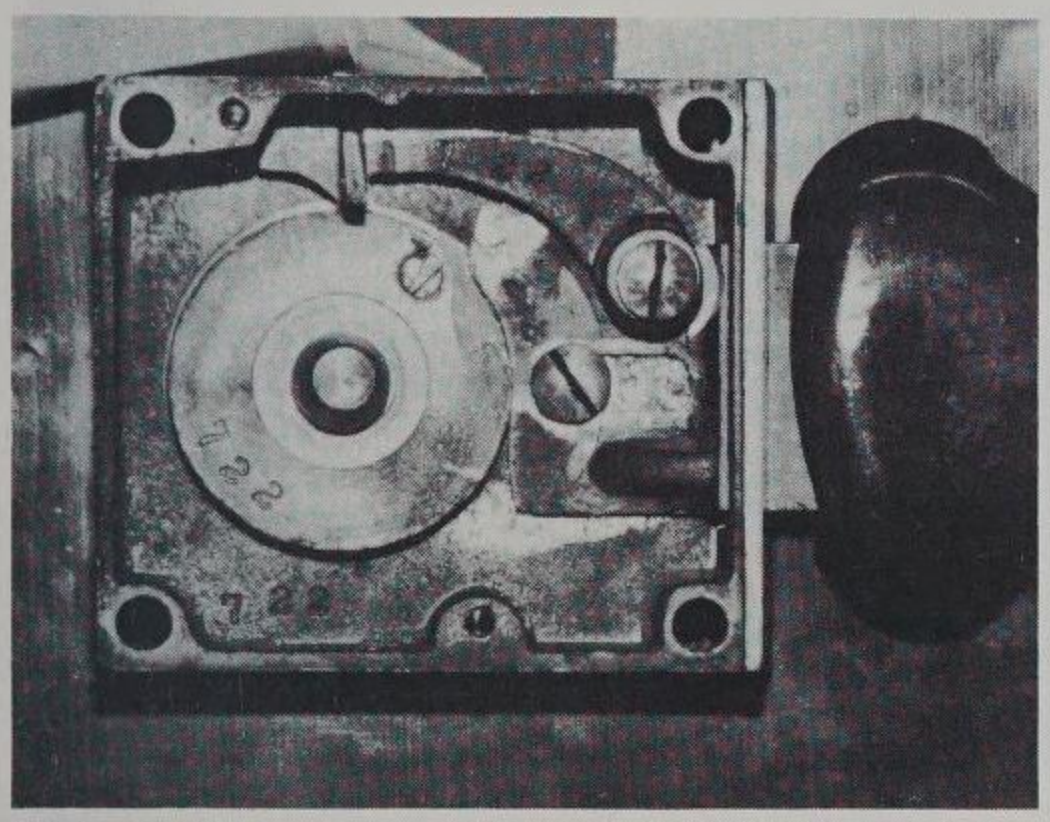
bar which is controlled by the handle. That's it. In this photograph eight the safe is in the locked position.

In photograph nine the combination has been dialed and the handle rotated to the open position.



9. Lock with combination dialed, handle in open position.

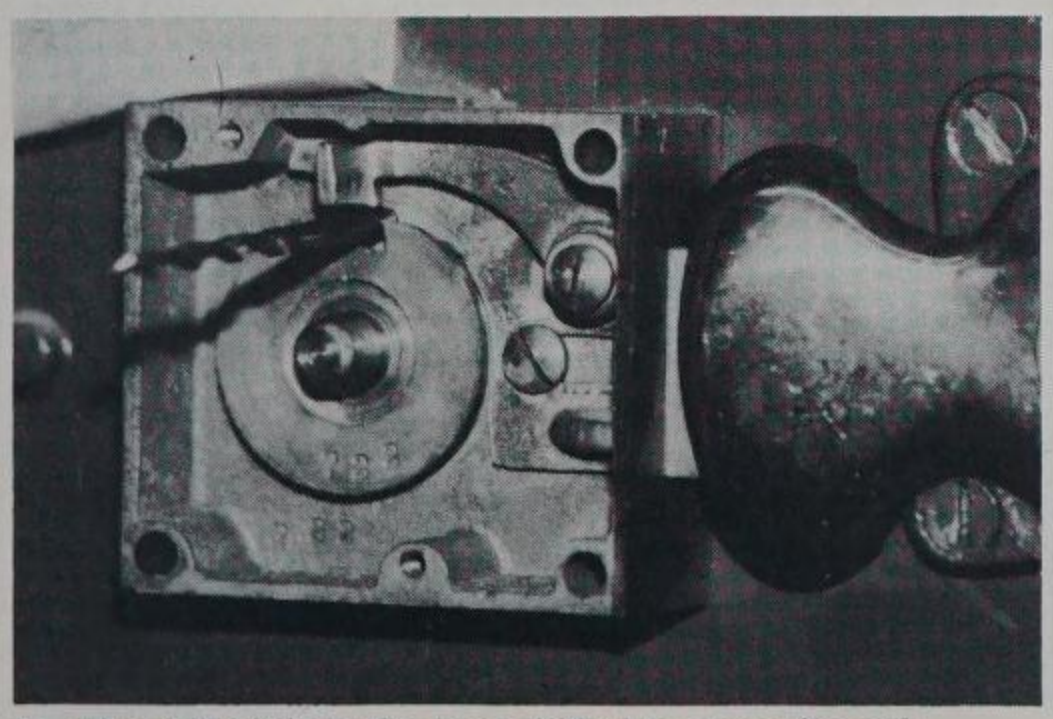
In photograph 10 I have removed the back cover of the lock, giving us a view of the front-mounted drive cam, the lever and the lockbolt.



10. Lock with back cover removed. Note front-mounted drive cam, lever and lockbolt.

Photograph 11 shows a drill bit sticking out of the hole that opened the safe. It is sticking through the gate in the drive cam. As you can see, it was dead-on under the fence.

Photograph 12 shows the disassembled wheel pack, comprising the curb, three hole-change wheels, their flies and a C-clip.



11. The drill bit is in the hole drilled to open the safe.

12. The components of the wheel pack: curb, three hole-change wheels with flies, and a C-clip.

Since grandpa and grandma wanted the safe "disarmed", I had two choices: (l) I could "remove" the dastardly lock free of *charge* (and put it in my collection). Or, (2) I could give grandma the wheel pack and have her put it in a safe place. With no wheel pack, the lock could be opened simply by turning the dial to the right until it stopped at 18.

Grandma chose option (2). But she sent Jessica up to get a popsicle before hiding the wheel pack. I chuckled silently. Grandmas are such softies. And I'll bet Jessica will look in the bottom desk drawer before she turns five.

I won't be surprised if someday, *"I'll be back!"*

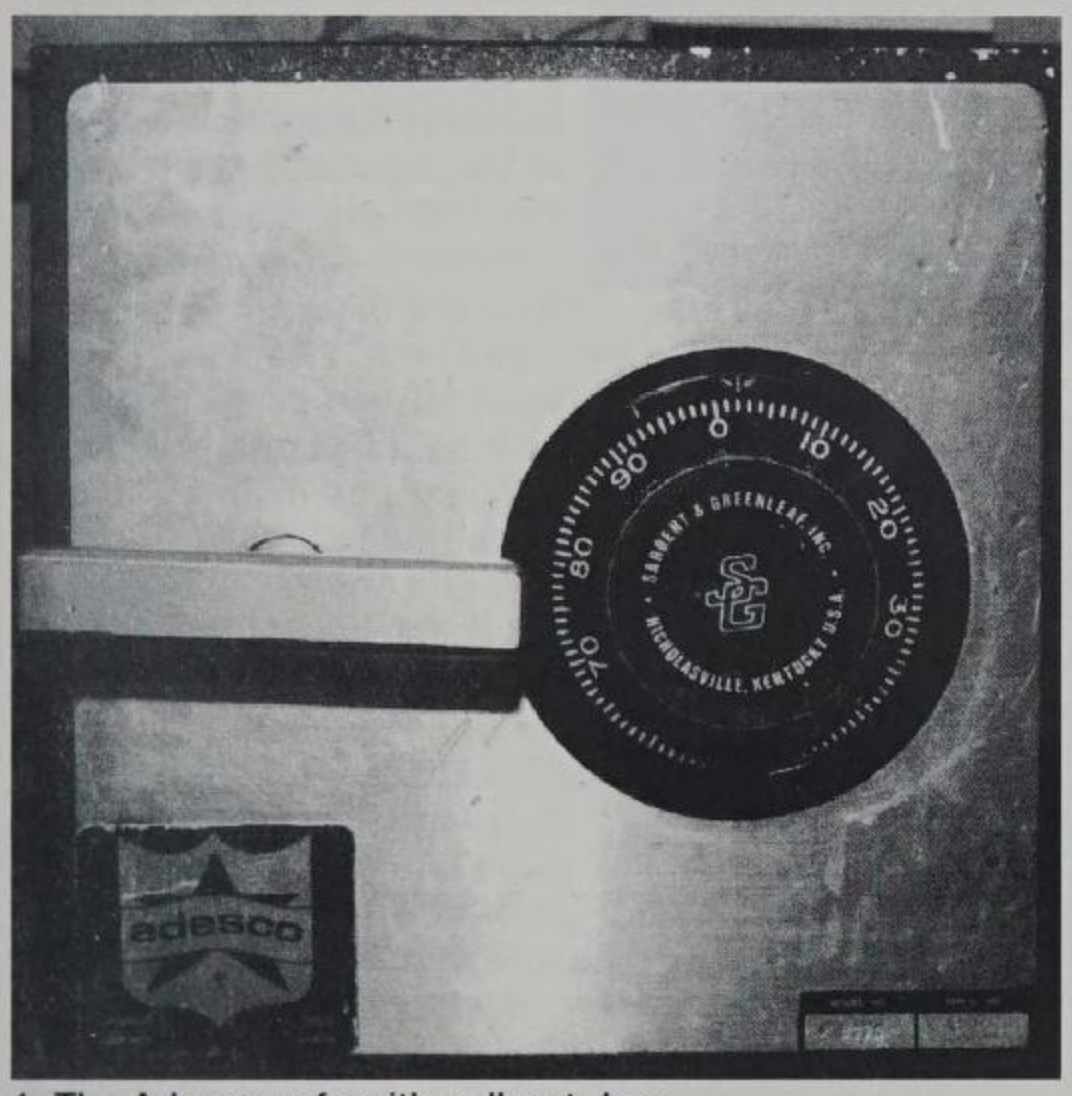
See ya next month.

by Dave McOmie

ADESCO'S TOUGH GUY

"The door is built like a powerhouse little wedge. The deadbar is at the right, the active locking bar to the left."

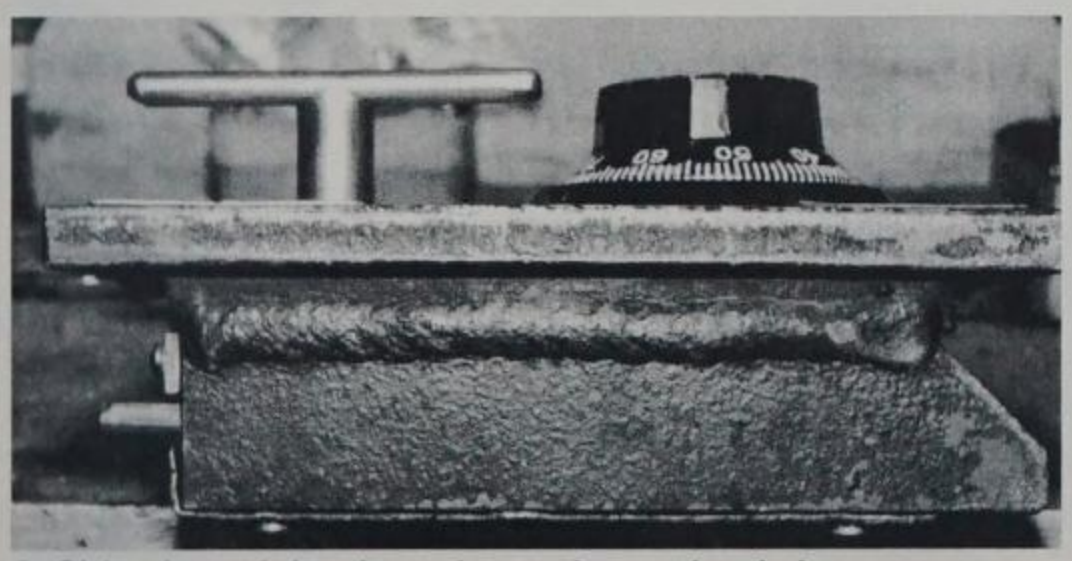
Adesco has concocted some superb hardplates. Adesco has made some incredible relockers. Adesco has built some great safes. The lift-out door in photograph one is one great little safe. I have seen some vicious burglary attempts on both this door and its hinged brother. Never have I seen a successful one.



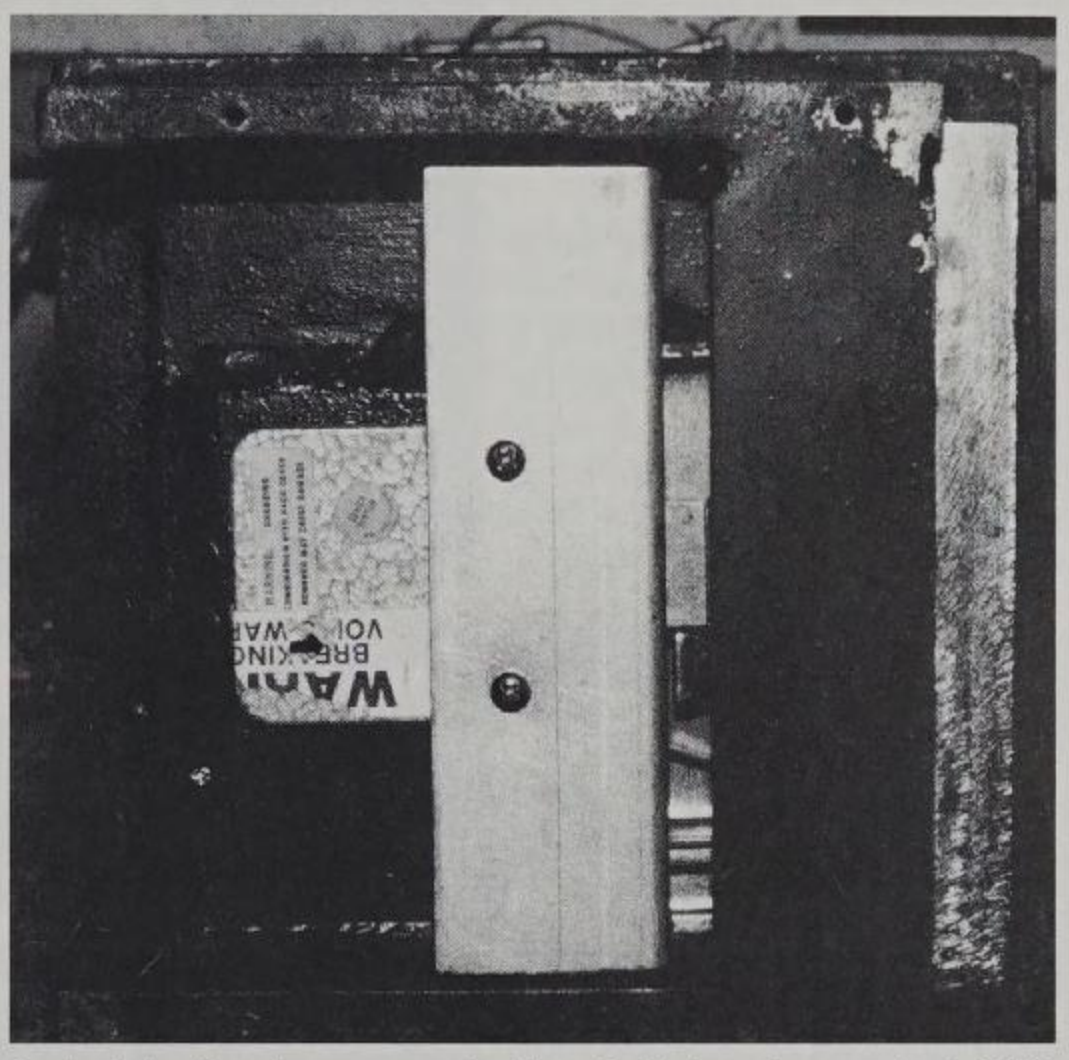
1. The Adesco safe with pull-out door.

The door is built like a powerhouse little wedge, as you can see in the side-view photograph two. The deadbar is at the right, the active locking bar is to the left. That's right; this door uses a flat locking bar rather than the more traditional round locking bolts.

Photograph three takes us inside the door with the back panel removed. We can see the flat locking bar to the left, and the right hand mounted Sargent & Greenleaf R6730 combination lock. Notice the large relocker detent attached



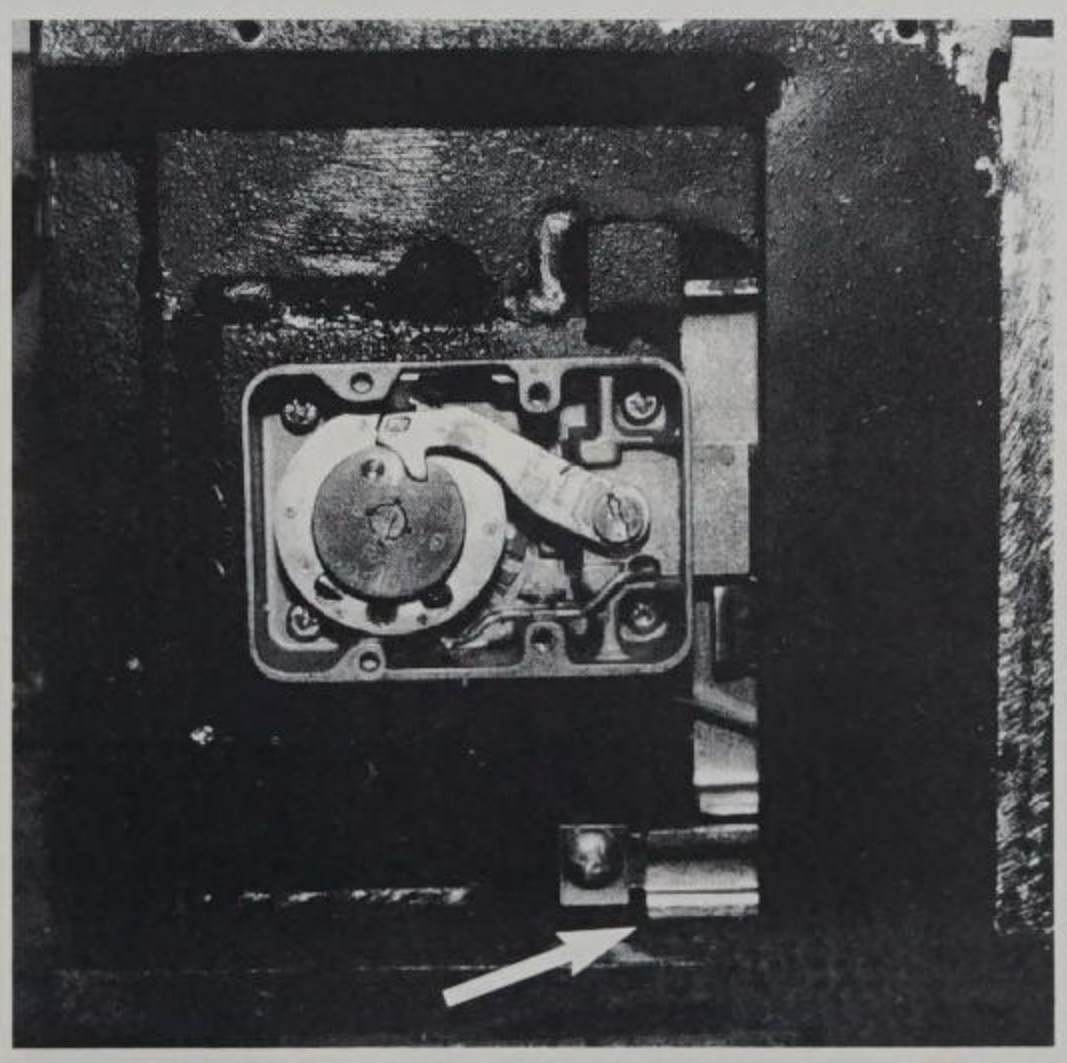
2. Side view of the door shows the wedged shape.



3. Inside the door reveals the right hand mounted S&G R6730 lock.

to the back cover of the lock. The reason it is so large is because the relocker is a long ways away—at the bottom of the door.

In photograph four the relocker detent and the back cover



4. The relocker detent and the lock's back cover are removed.

of the lock have been removed. The combination has been dialed, the fence has fallen into the wheel gates, but the lockbolt has not yet been retracted. Notice the relocker at the bottom of the door (*see arrow*). This is one dastardly relocker that we will discuss in a moment.

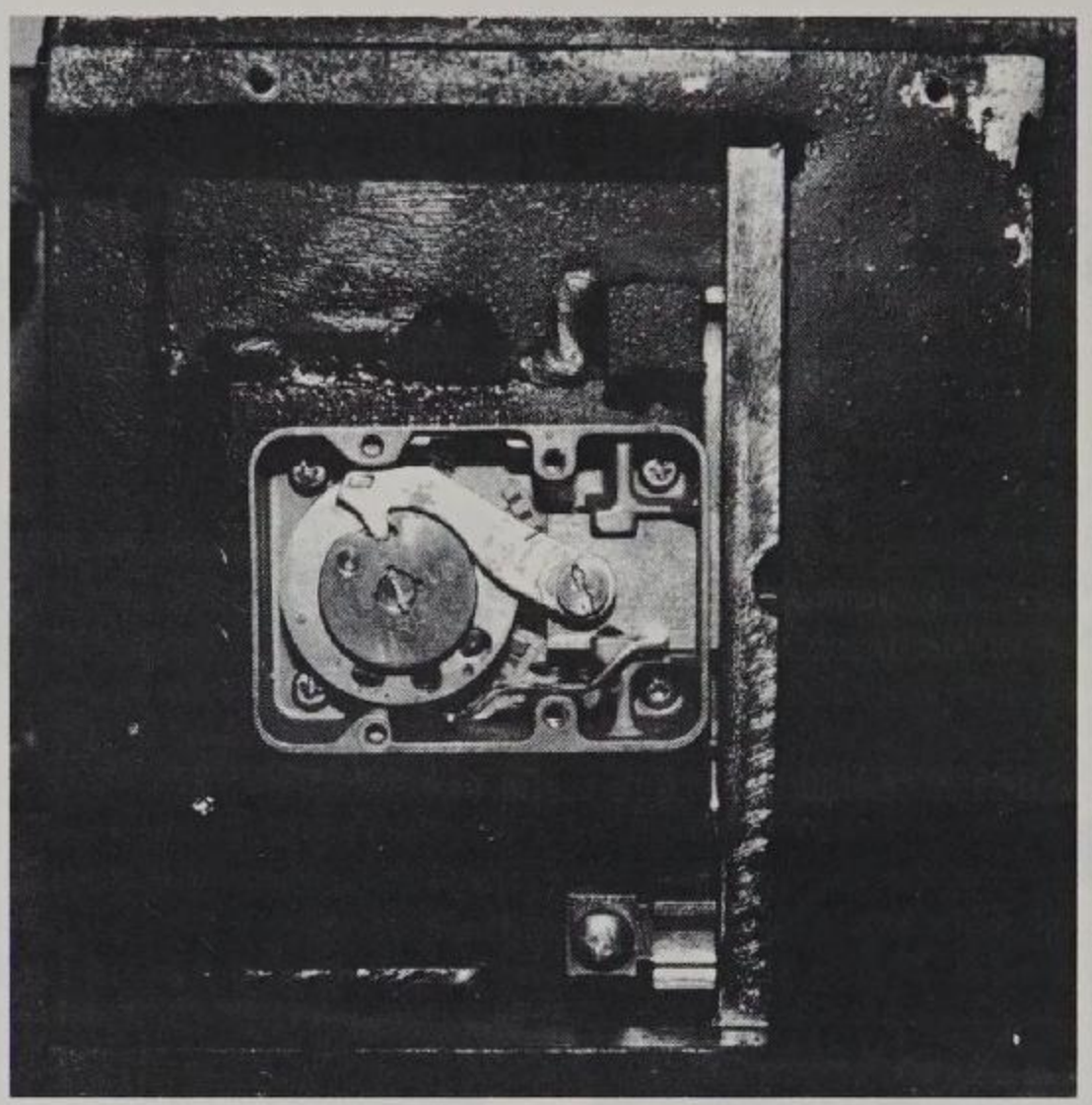
In photograph five, the lockbolt has been retracted and the handle has been rotated, retracting the flat locking bar. (The relocker was held down to allow this).

Opening one of these safes isn't easy, but it isn't too bad either. The best drill point is 97 x 7/8". That will put you right at the edge of the wheels directly under the fence. There are three things that might give you trouble.

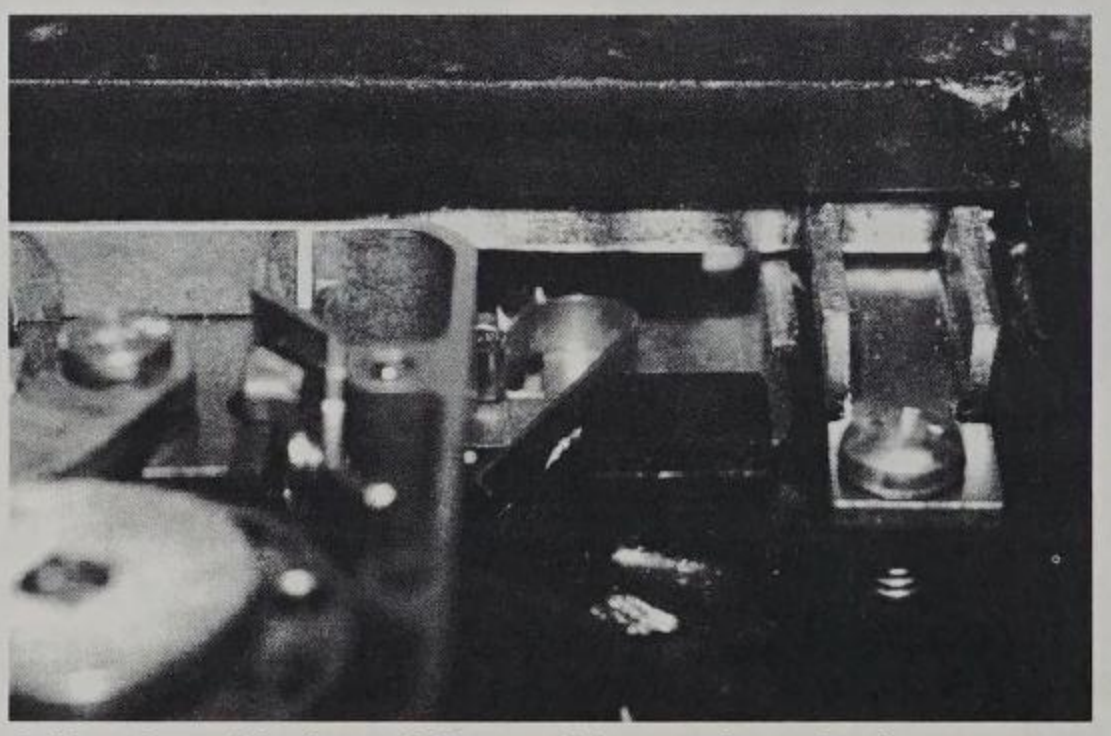
(l) The gold-faced ones are loaded with Adesco's super-duper hardplate, which is very similar to Maxalloy. Bring your lunch, or hope that you have a silver-faced safe.

(2) After a burglary, sometimes the punch resistant feature of the flat locking bar can give you fits. (Just ask me about an all-dayer I had!)

(3) If you aren't more careful than I was when you inspect the door, you can fail to properly understand the relocker(s). (Some doors have two, one top and one bottom; this one just has the one at the bottom.) I had never had to drill one of these relockers before I wrote *The National Locksmith Guide to Safe Opening, Vol. 1.* So I got out on the job, proudly pulled out my book (after bragging to the owner of the safe that I was the author), and proceeded to drill out the relocker screw. Once the screw was removed, I triumphantly grabbed the handle and prepared to make a flourish out of opening the door. The handle didn't budge. WHAT?!? No joke. Drilling out the relocker screw won't do the job.



5. Holding the relocker down, we retracted the lockbolt.



6. Here's a sideview of the trouble causing relocker.

What I didn't know, and found out the hard way, is that there is a hole in the other end of the relocker, and there is a roll pin in the hole that acts kind of like a guide for the relocker. The roll pin also stops the relocker from becoming free floating if the screw is removed. Gawd, was I embarrassed. I won't tell you how long it took me to finally get that one open.

The right drill point and technique is in *The National Locksmith Guide to Safe Opening, Vol. 2.* You have to drill through the relocker and either hook it and pull it down, or tap it and pull it down by threading a small screw into it. In either case, this is one tough relocker. (*See photograph six for an angled shot of the relocker*).

Kudos to Adesco for making a worthy adversary. And kudos to Bob Volosing for making a drill bit that will lead us to victory.

See ya next month.

BANK SAFE OR BANKER'S SAFE?

"What is the difference between a Banker's Chest, a Bank Safe, and a Banker's Safe? Read and find out."

Trivia question: what is the difference between a Banker's Chest, a Bank Safe, and a Banker's Safe? Answer: no one knows for sure. But I will tell you how I differentiate them, based on my own analysis of dozens of antique catalogs.

A Banker's Chest was what we now call a Jeweler's Chest. It is a heavy duty inner safe. It is never free standing, and is always at least one inch thick (in most cases more than two inches thick). Thinner inner doors were called Day Doors, Treasury Doors, SubTreasury Doors, Steel Doors, Inner Doors, etc.

A Bank Safe is usually a large Jeweler's Chest that is free-standing. Whereas a Jeweler's Chest is always inside another safe, a Bank Safe is free-standing. What differentiates a Bank Safe from a Banker's Safe is that a Bank Safe has no casters, whereas a Banker's Safe will have casters. Both are free-standing, and both may have a pressure system.

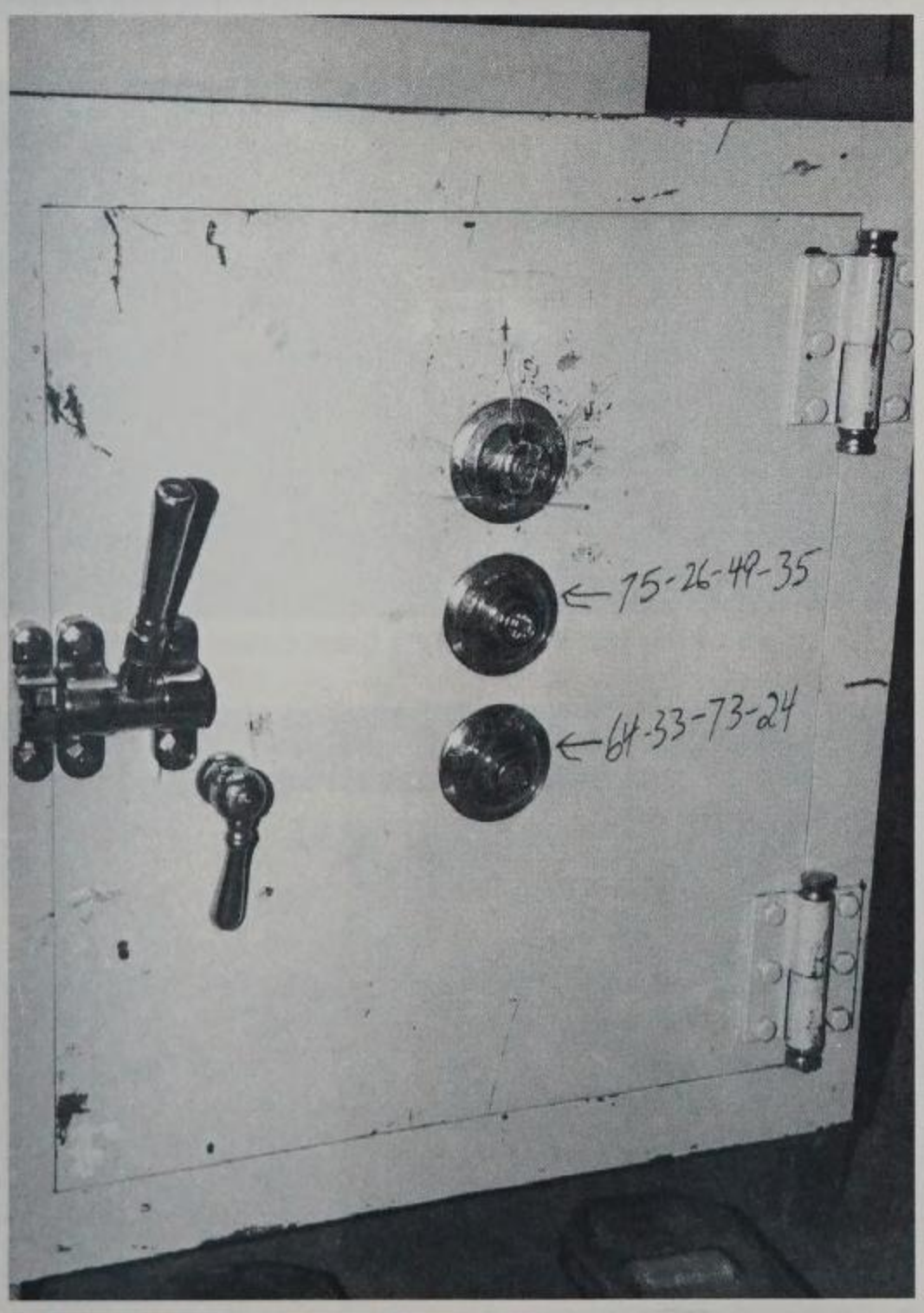
Got it? Okay, then let's look at a Bank Safe and a Banker's Safe.

Photograph one shows a Bank Safe. It is free-standing but lacks casters. This is a very unusual Bank Safe in that it has not one, not two, but three dials. Geez, I have heard of dual custody, but this one has triple custody!

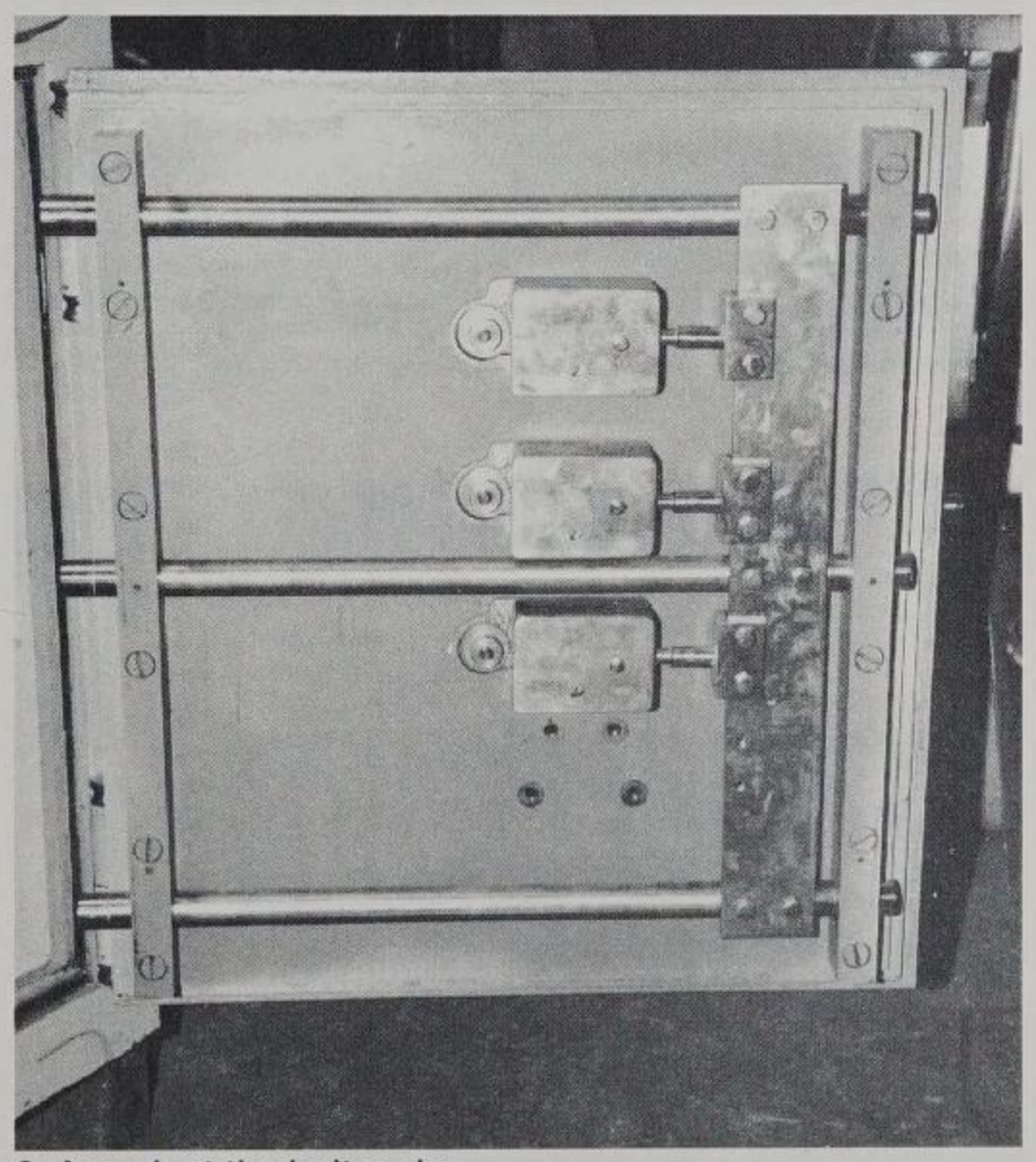
Photograph two takes us inside for a peek at the boltwork arrangement. There are three locks, all indirect-drive, and all mounted RH.

Photograph three shows us the top lock with back cover removed. This is a roller bolt lock, and as we can see, it is unlocked in this photo. Notice that the lockbolt did not retract into the lockcase, but rather pivoted up out of the way, so the boltbar could enter the lockcase.

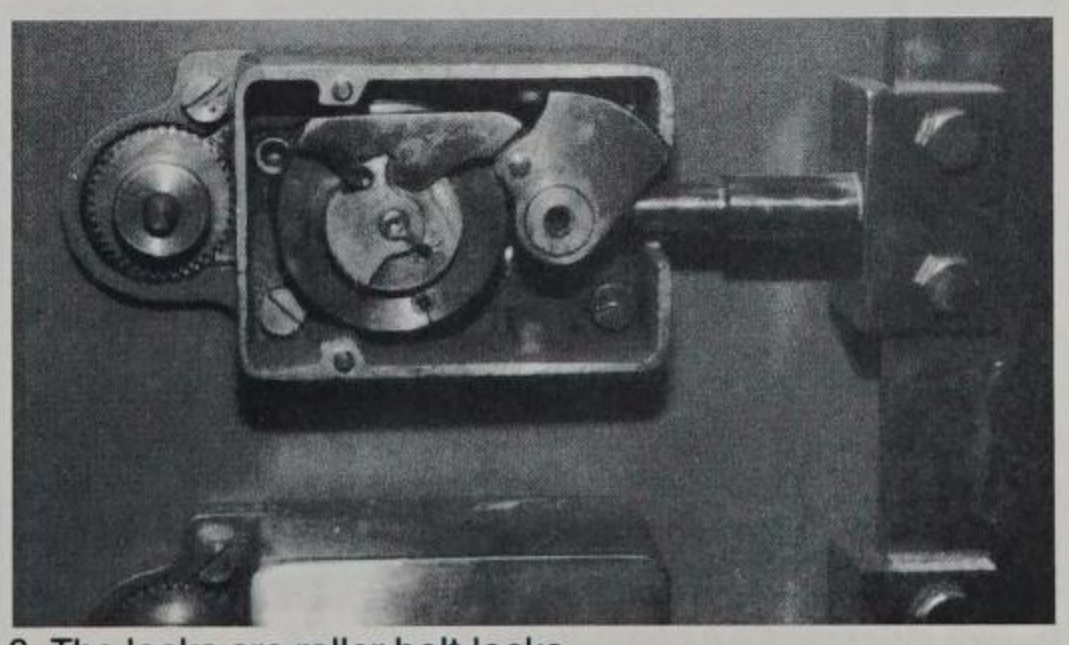
Photograph four is of a Banker's safe. It is free-standing and has its own casters. This one has a crane hinge, and the usual two dials. Photograph five takes us inside for a look at the



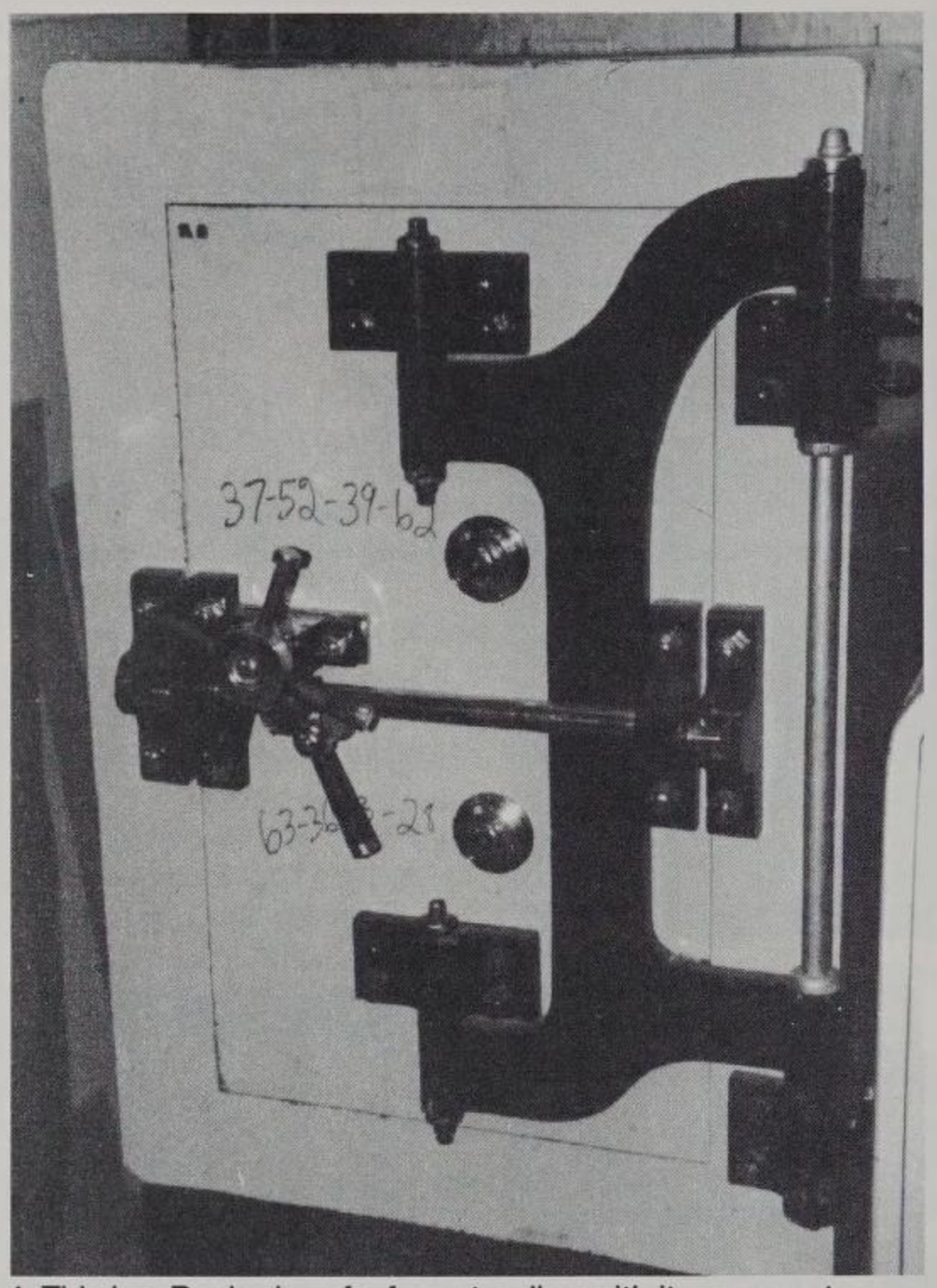
1. This Bank Safe sports three dials.



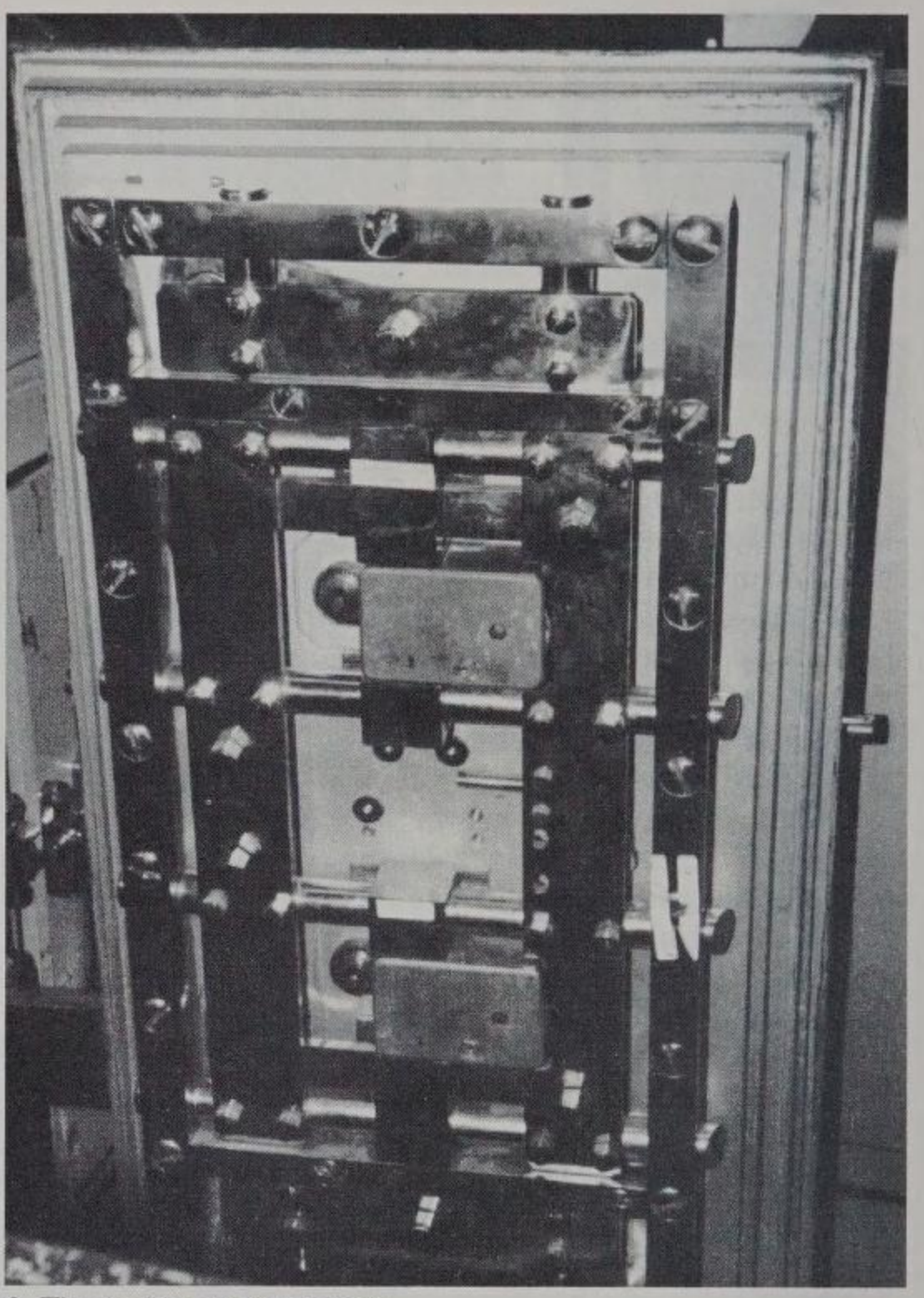
2. A peek at the boltworks.



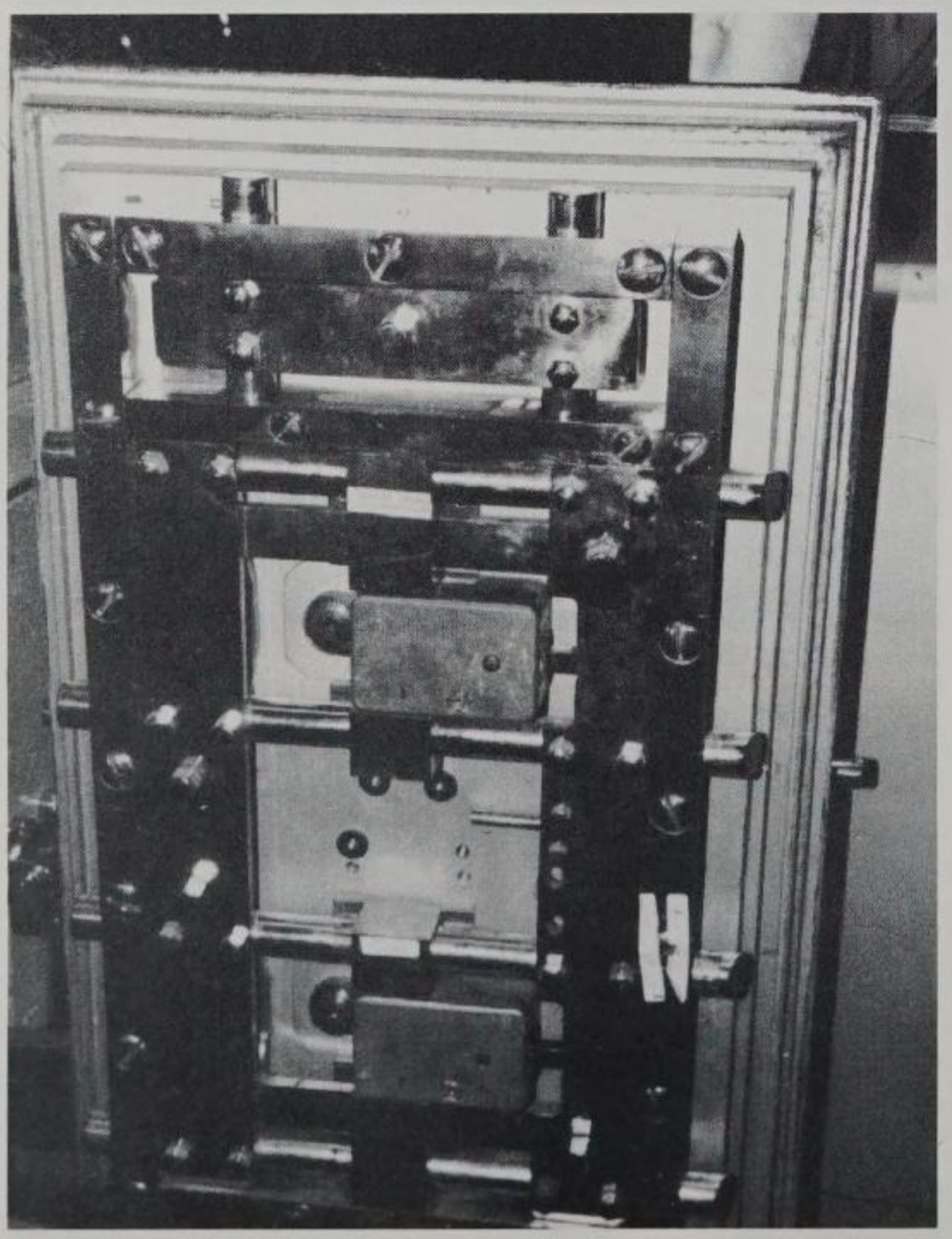
3. The locks are roller bolt locks.



4. This is a Banker's safe; free-standing with its own casters.

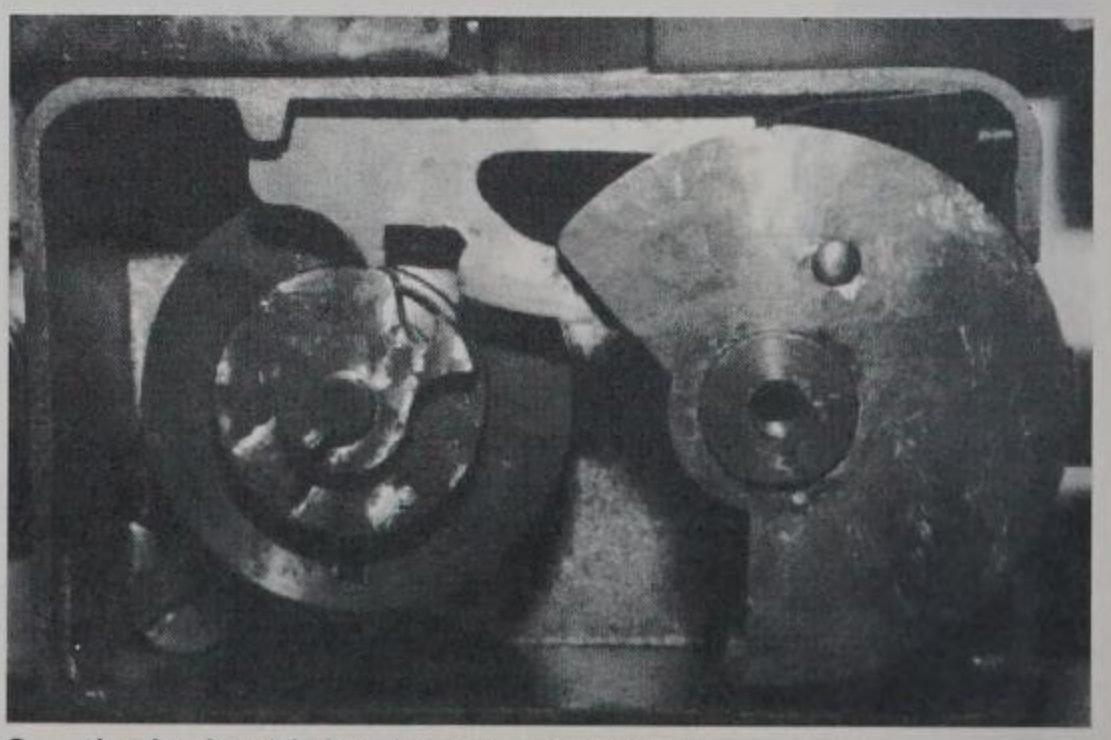


6. The boltwork retracted.

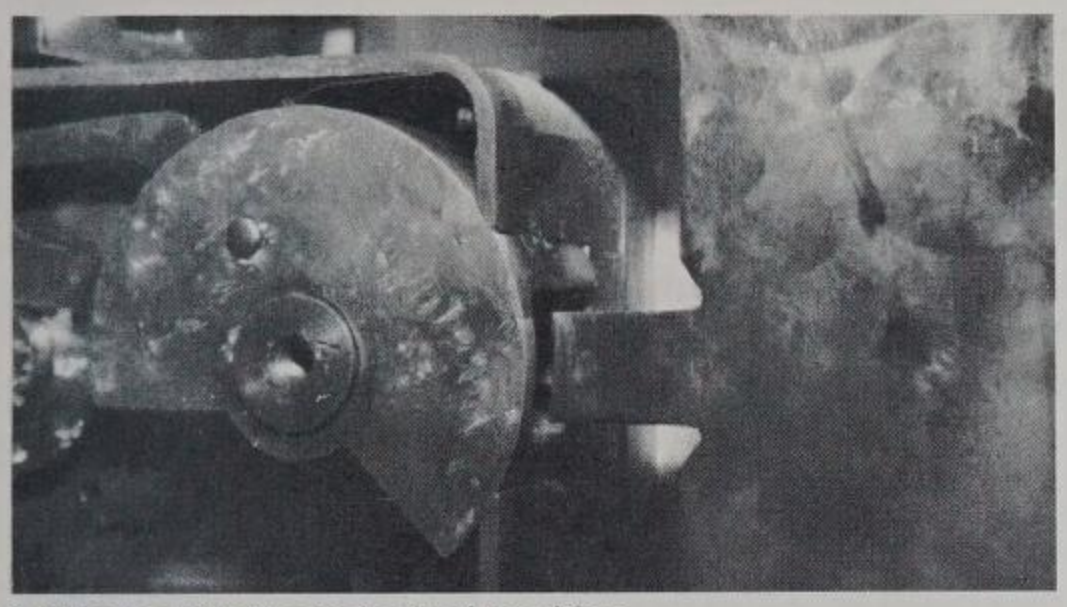


5. Two indirect-drive comb-locks fit this safe.

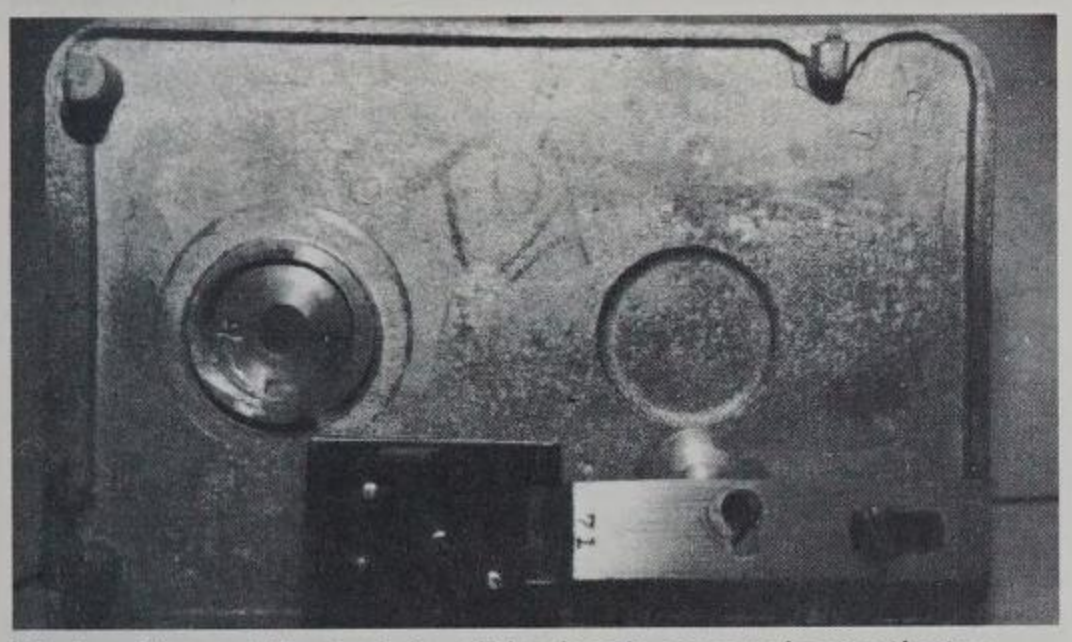
7. Close-up of the top lock with its back cover on, and...



8. ...the lock with back cover removed.



9. The lock in the unlocked position.



10. Looking at the inside of the back cover shows that a change key cannot be inserted with the keylock locked.

boltwork. There are two indirect-drive comb-locks, both mounted RH. As with most really good banker's safes, this one has a four-way boltwork, meaning there are active locking bolts on all four sides. In this photo, the boltwork is extended.

In photograph six, the four-way boltwork has been retracted. There are 12 locking bolts on this door—four on each side and two on the top and bottom. Notice the spot in between the two locks where a timelock could be mounted.

Photograph seven takes us in for a close-up of the top lock with its back cover on. Notice the keylock at the bottom center of the back cover. This keylock has a lockbolt extension that blocks the change key hole. In other words, you can't insert a change key into the change key hole unless you first unlock the little lever lock.

Photograph eight shows us the lock with back cover removed. This is a roller bolt lock that is a little different than the one on the preceding safe, as we will soon see. In this photo the lock is in the locked position.

Photograph nine shows the lock in the unlocked position. But notice that this lockbolt is too large to pivot completely up and out of the way. Instead, there is a slot cut in the lockbolt. When the lock is unlocked, the lockbolt pivots around so that the slot is lined up with the boltbar. Now the boltbar can enter the slot as the boltwork is retracted.

Photograph 10 shows us the inside of the back cover. In this photo, you could not insert a change key into the back cover because the keylock is locked. The hole in the extended lockbolt of the keylock is not lined up with the hole in the back cover. When the keylock is unlocked, the hole in the lockbolt extension lines up with the change key hole in the back cover to allow insertion of the change key.

Well, that about wraps it up for this month. Now you know the difference between a Banker's Chest (Jeweler's Chest), a Bank Safe, and a Banker's Safe. Merry Christmas, and I'll see you next year!

by Dave McOmie

OWE, SESAM, AND ROSENGRENS

"This month I would like to introduce you to my friend Owe, and to a few of the safes he sees in Sweden."

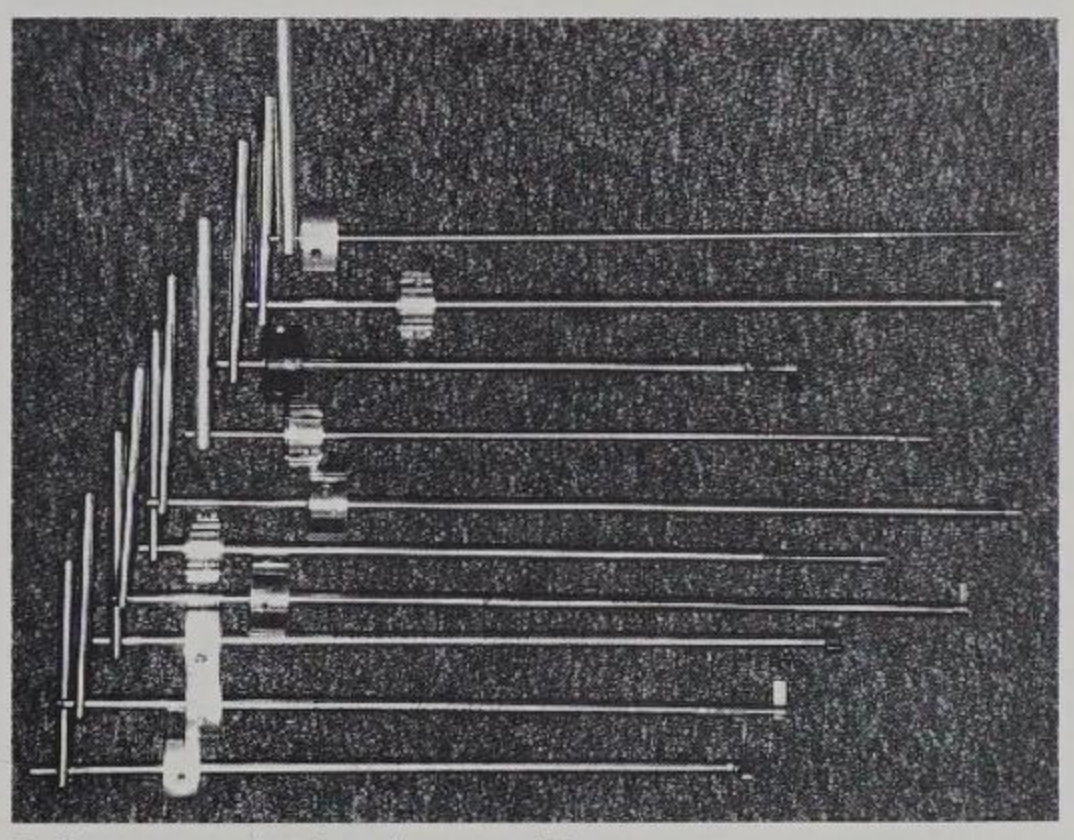
I have never been to Goteborg, Sweden. But I've been sharing photographs and information with Owe Bengtsson for so long that it feels like I have. This month I would like to introduce you to my friend Owe, and to a few of the safes he sees in Sweden.

Owe and his partner, Leif Enander, spent many years together in the Rosengrens safe factory before starting Sesam Lasservice in 1969. Today Owe and Leif share the responsibilities of running the most successful lock and safe shop in Goteborg. Photograph one shows Sesam Lasservice's storefront.

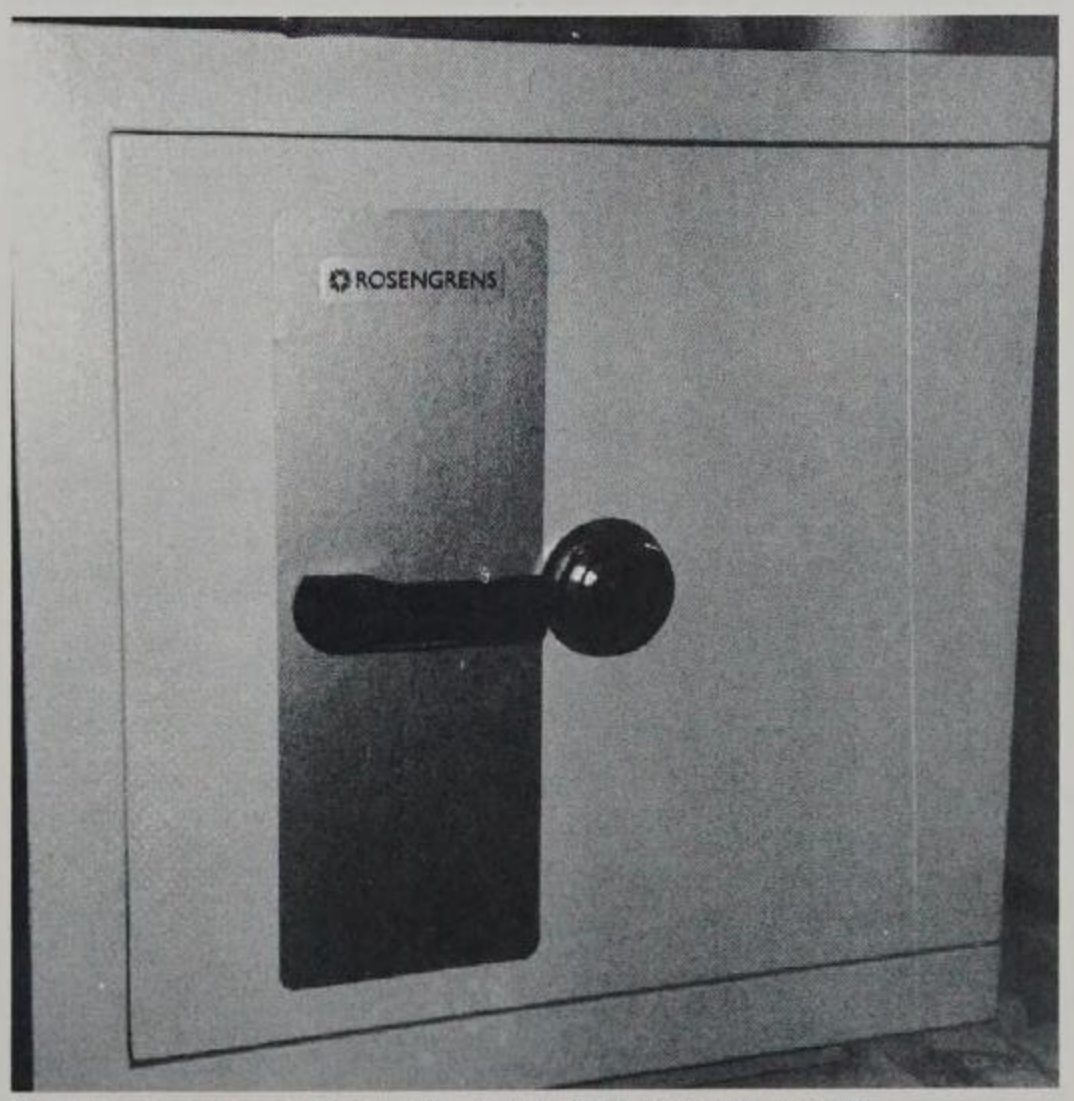
Photograph two shows the Sesam Gang (Owe has the beard; Leif is in the back row, second from the left). You can only appreciate these uniforms if you see them in color. They are gorgeous, red with white and blue pinstripes. This

1. Sesam Lasservices's storefront in Goteborg, Sweden.

2. The "colorful" group of employees in their uniforms.



3. Some popular two-in-one picks.



4. A Rosengrens fire safe. (With "hidden hinges.")

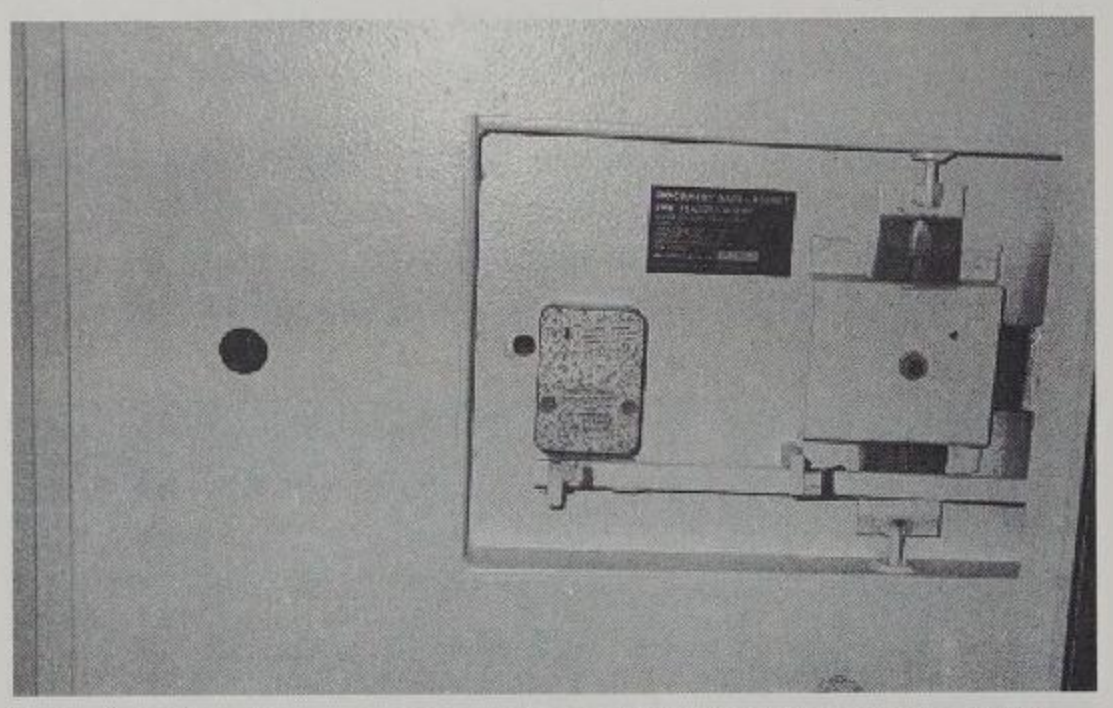
is the classiest group of locksmiths I have ever seen—their dress ought to be an inspiration to us all.

Owe is well-known internationally for his expertise with European keylocks. He has dozens and dozens of two-in-one picks, the most popular of which are shown in photograph three.

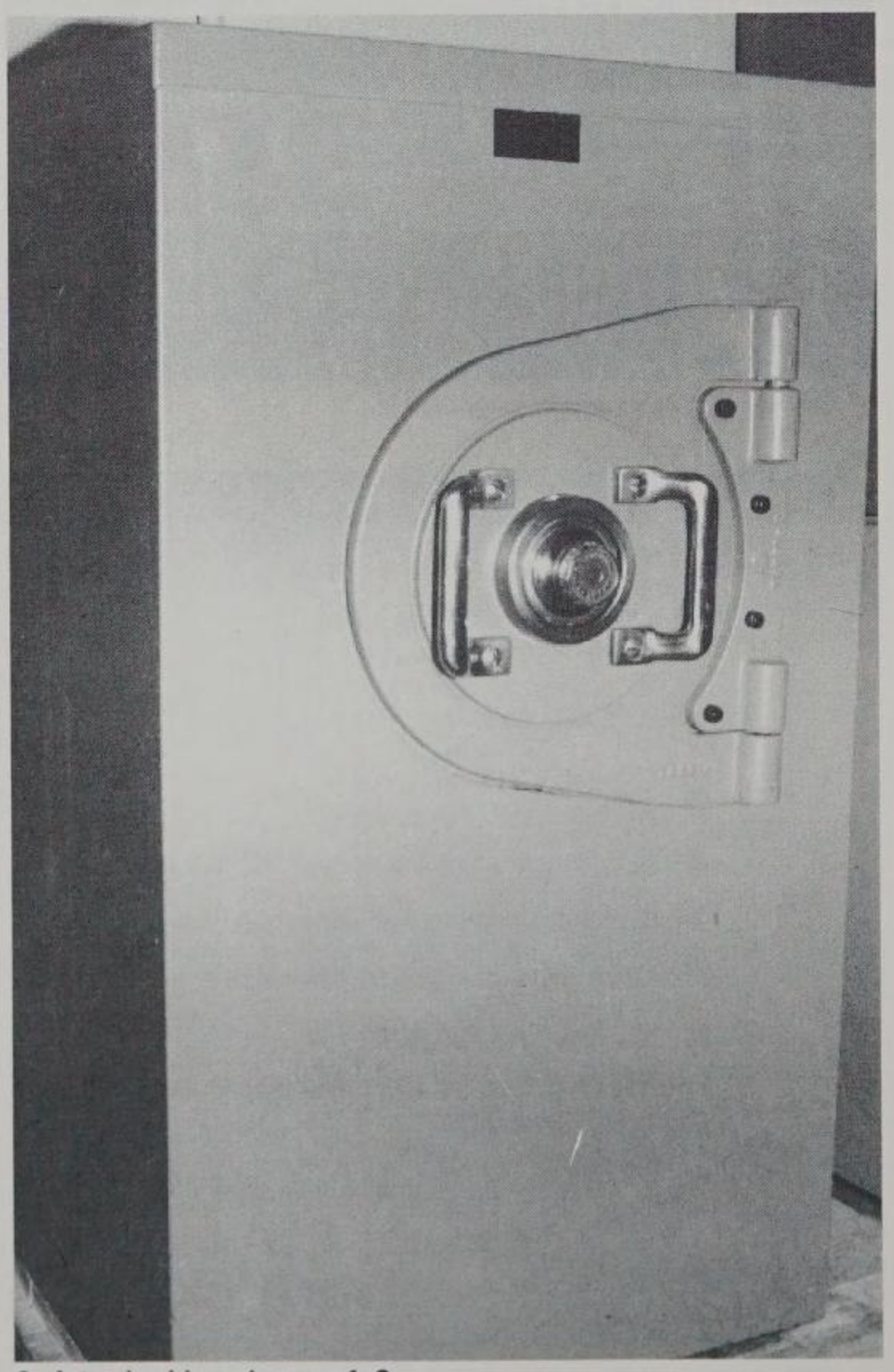
Owe also has an outstanding photography collection of safes and locks. The remainder of this article will be devoted to some very interesting Swedish safes.

In photograph four we have a Rosengrens fire safe. Look for the hinges—betcha can't see 'em. For that matter, where does the door end and the body begin on the hinge side?

On the inside, we have a fairly simple arrangement. (*See photograph 5.*) The S&G 6730 is mounted VD, and there is no external relocker. This safe looks very similar to the Hadek fire safe that one American safe maker was importing.



5. Inside the Rosengrens, with an S&G 6730 mounted VD.



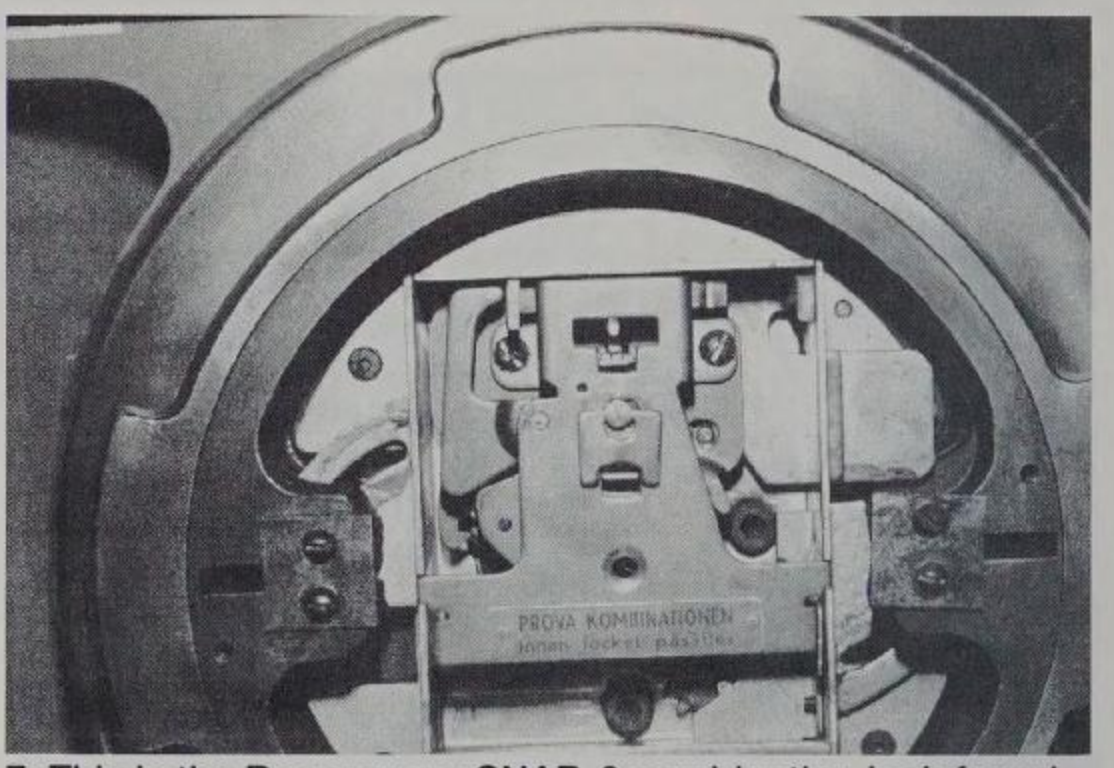
6. A typical lug door safe?

In photograph six we see a safe that looks vaguely familiar to all American safemen: it's a lug door. But one look inside will tell us that the similarities are only superficial.

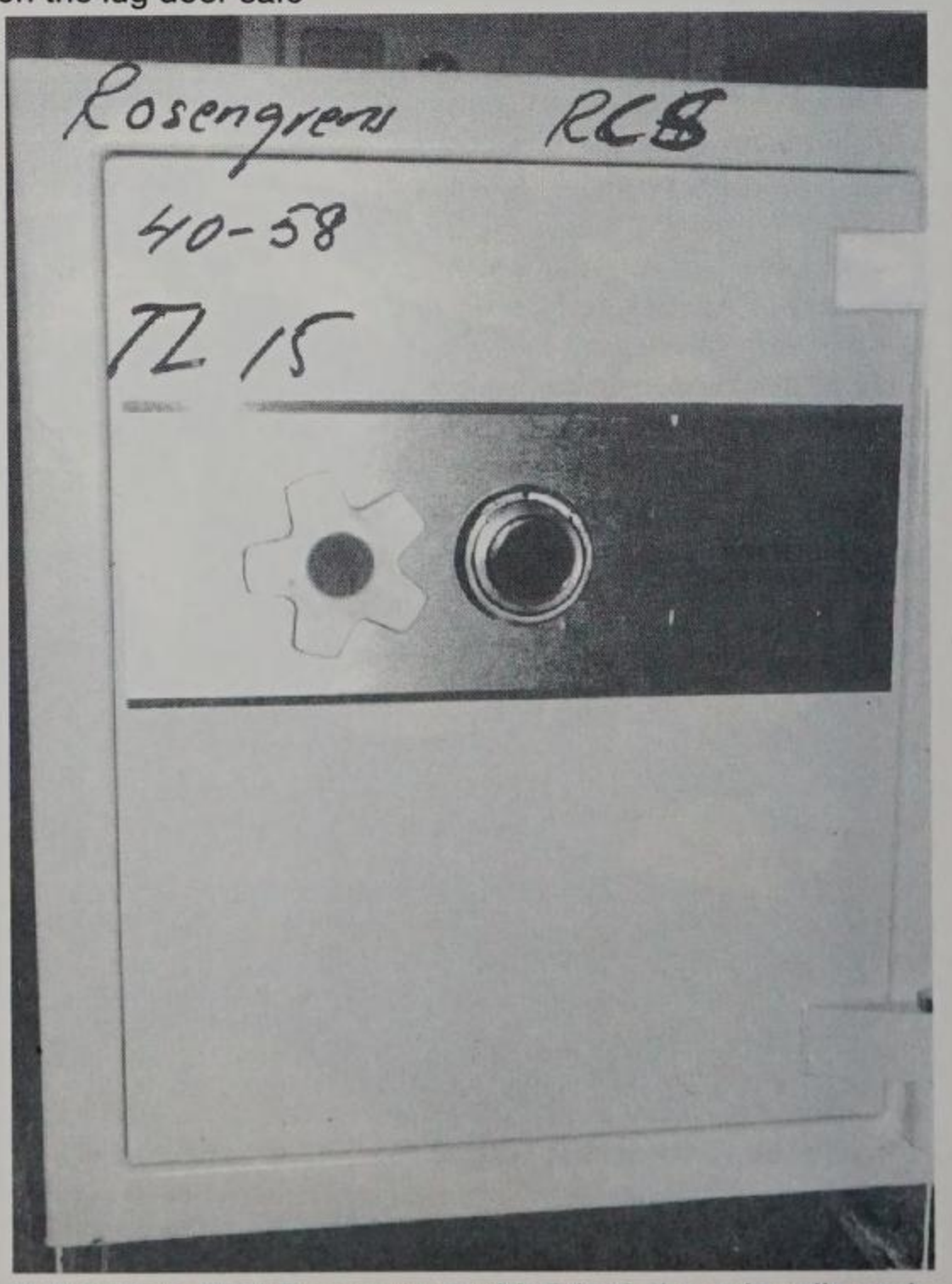
In photograph seven we can see why. This lug door uses one of the most unusual combination locks ever made—the Rosengrens CNAB-6. This is a dual-bolt door, with door locking bolts at 3 and 9 o'clock.

Photograph eight shows us a square door Rosengrens. This safe sports the distinctive Rosengrens 5-1eaf clover handle, and a standard spyproof S&G dial.

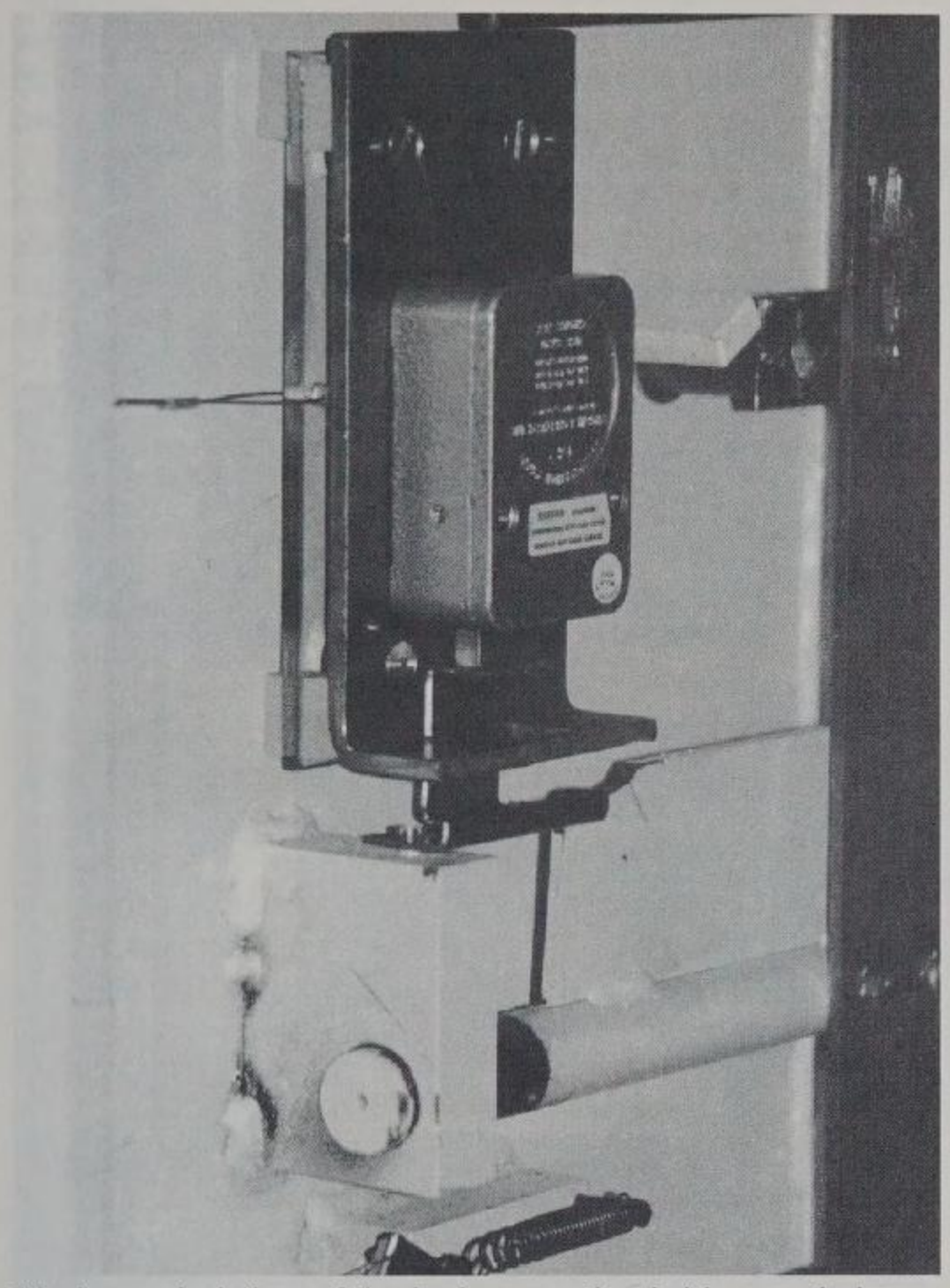
On the inside we see a 3-way boltwork with an S&G 6730 mounted VD. (*See photograph 9.*) Notice the cable that



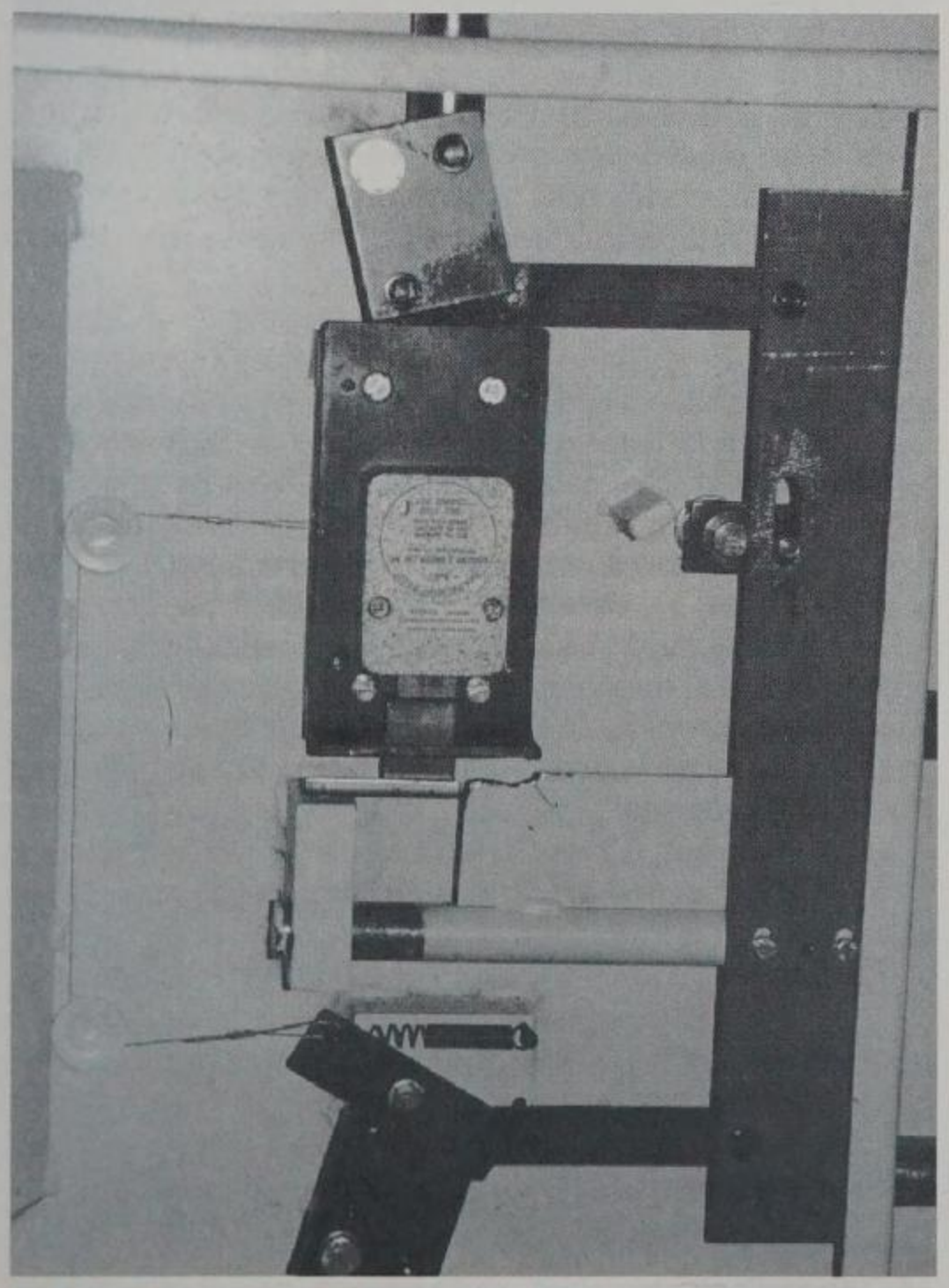
7. This is the Rosengrens CNAB-6 combination lock found on the lug door safe



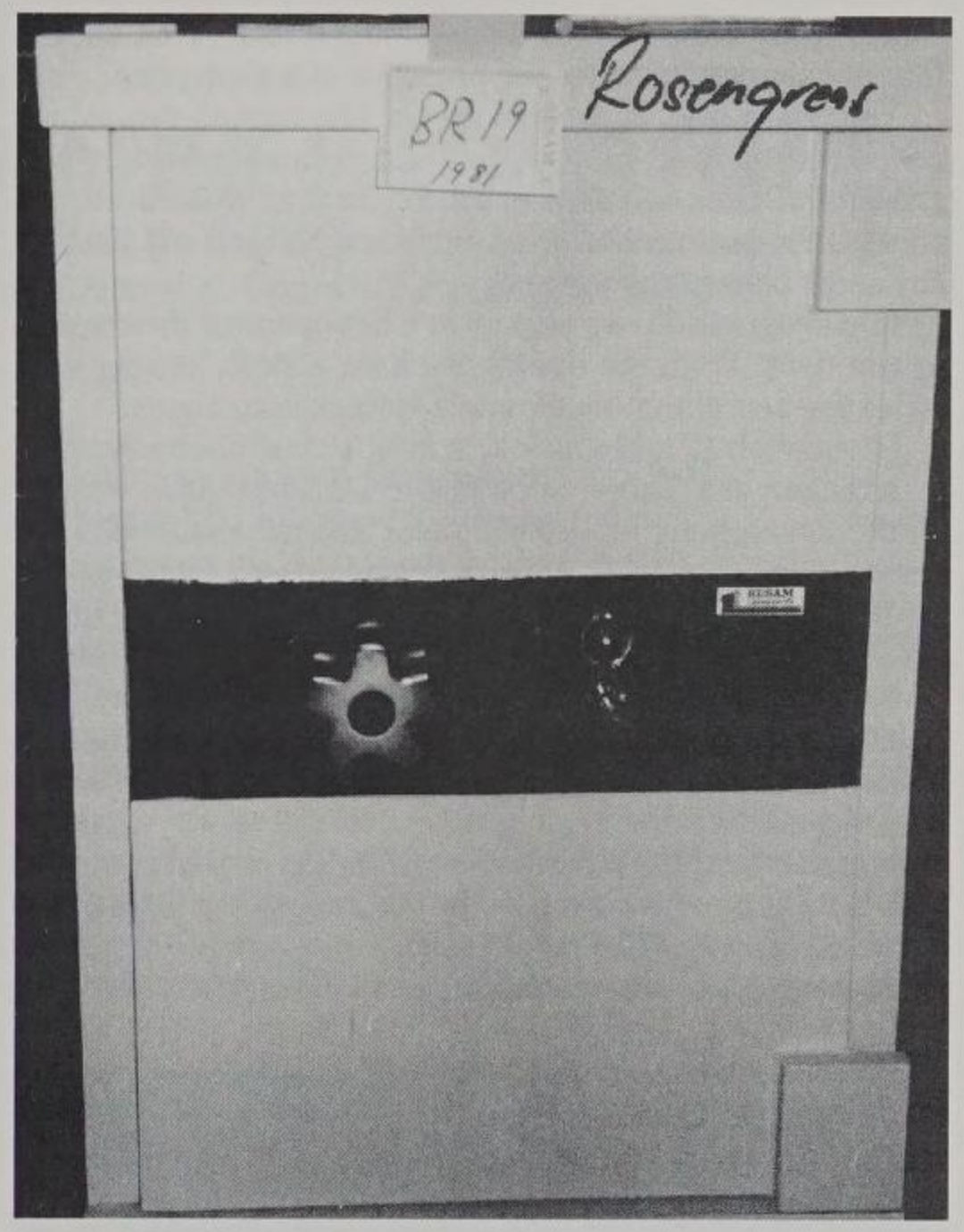
8. A square door Rosengrens with 5-leaf clover handle and a spyproof S&G dial.



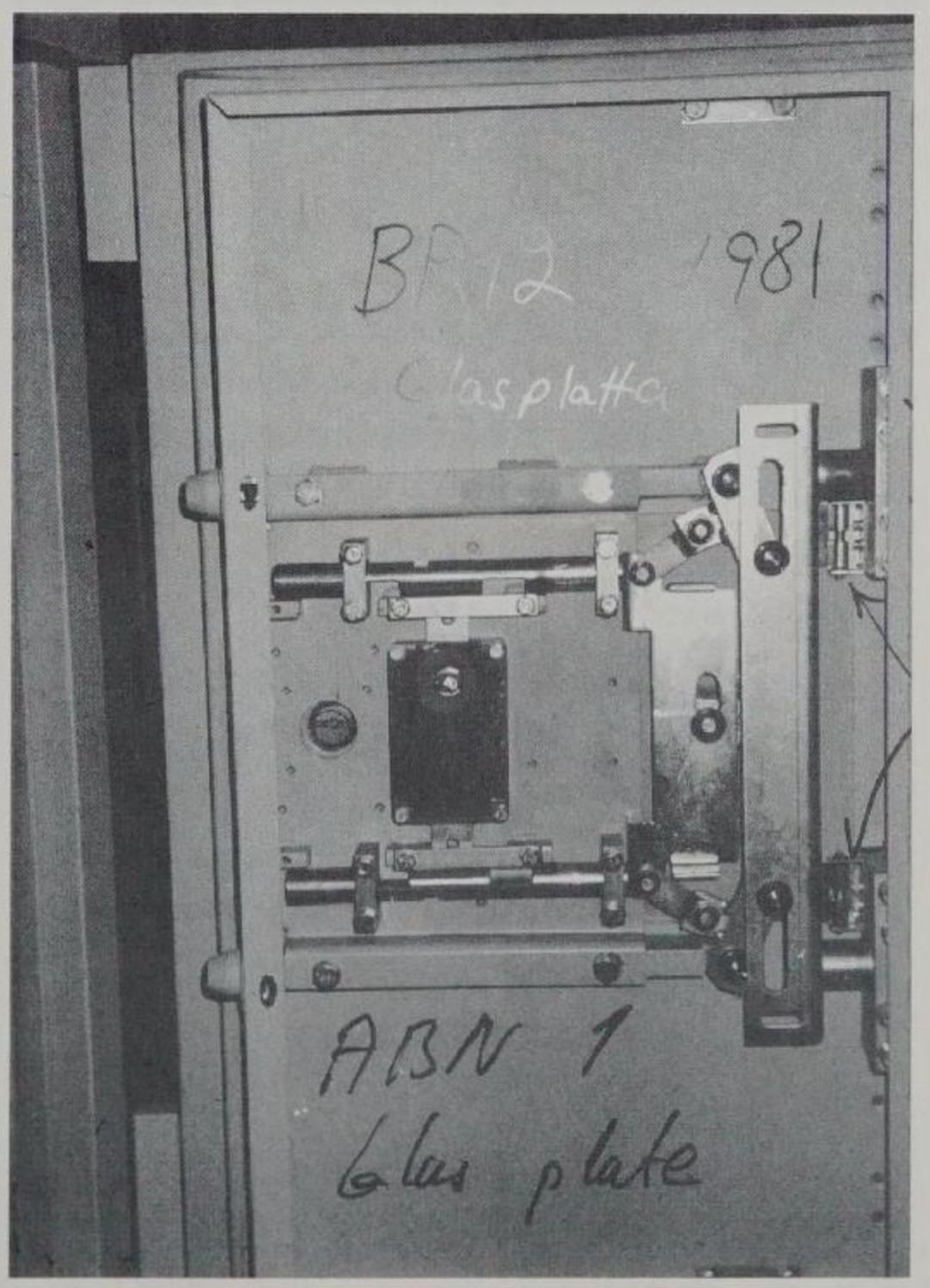
10. An angled view of the lock, mounting bridge, and glass plate.



9. A 3-way boltwork with an S&G 6730 found on the inside of the square door safe.



11. A key-operated Rosengrens square door.



12. The boltwork arrangement of the key-operated safe.

comes from underneath the combination lock. That usually (but not always) indicates the presence of a glass plate.

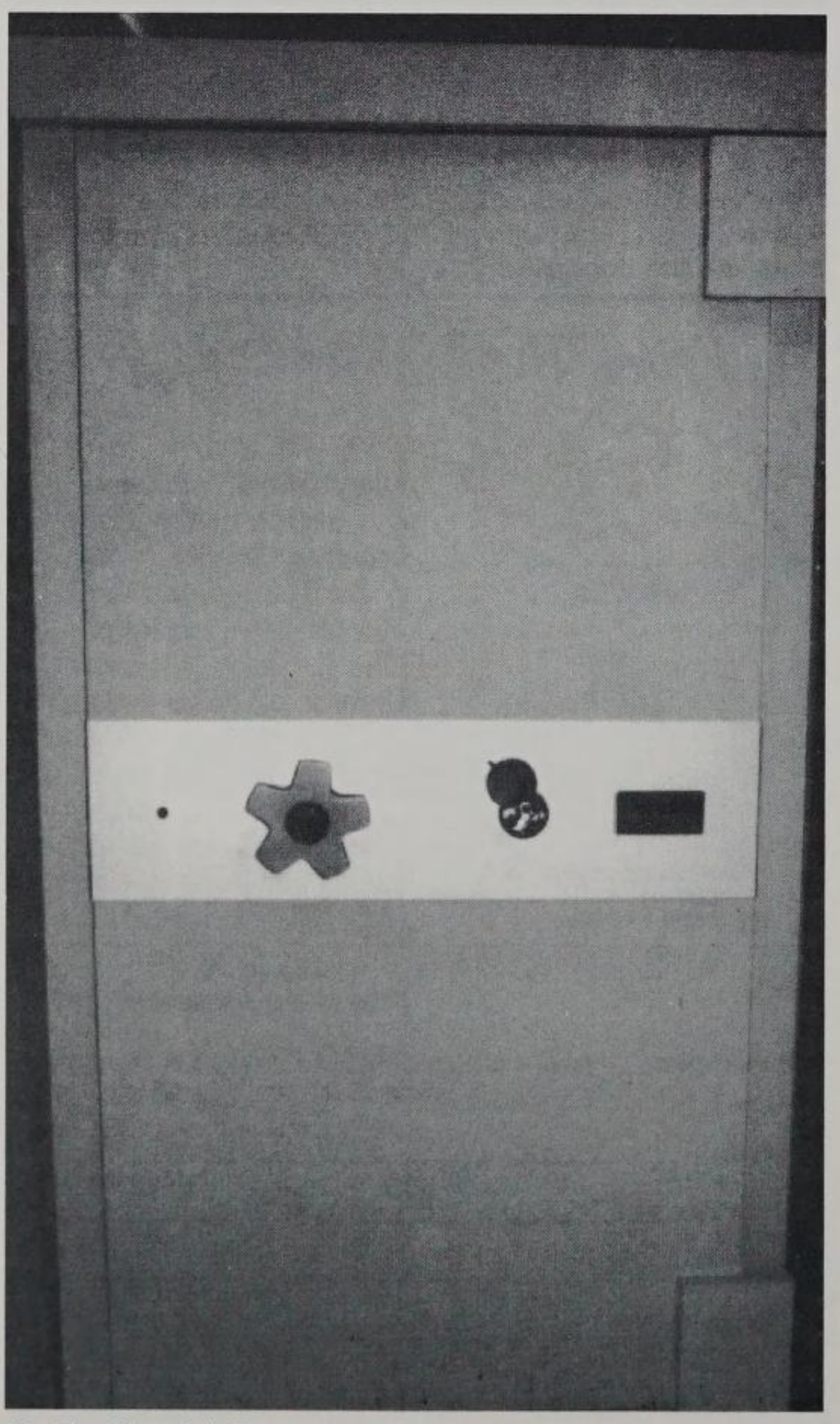
Yep, glass it is, as we can see in photograph ten, which gives us an angled-view of the lock; mounting bridge, and glass plate. The cable runs to a relocker that, when fired, will prevent the bottom bolt from retracting, which will prevent any of the bolts from retracting.

In photograph 11, we step up to a key-operated Rosengrens square door. From the outside we have a sleek looking safe, with a five-1eaf clover handle and a keylock escutcheon.

Photograph 12 takes us inside for a look at the boltwork arrangement. Those of us in the U.S. who have worked on the Rosengrens Jupiter will recognize the basic boltwork design here. This safe uses the Rosengrens ABN-l as the primary lock. This safe is built for battle. It has a punch-resistant boltwork, a glass plate that covers almost the entire center portion of the door, and two hinge-type relockers that, when fired, prevent the punch-resistant blocks that sit behind each locking bolt, from dropping down and allowing the boltwork to retract.

In photograph 13 we have a Rosengrens Mercurius, which is the beefier brother to the preceding safe. Once again, the look is stylish and simple.

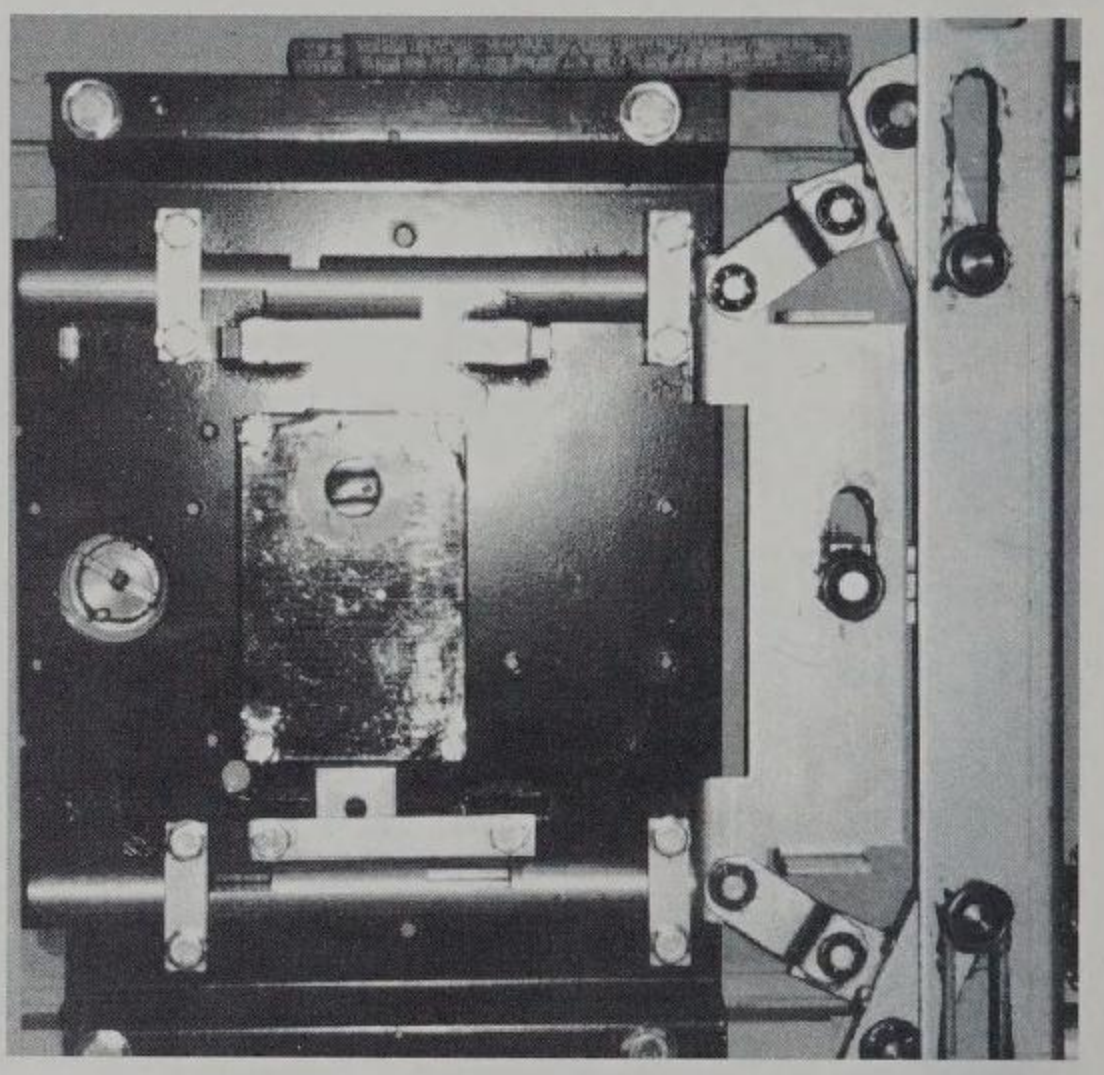
Photograph 14 shows the lock and boltwork arrangement.



13. The "beefy" Rosengrens Mercurius.

The lock is a Rosengrens ABN-l keylock. In this photo, keylock is locked and the boltwork is in the extended position. Notice that there is a rectangular block behind each of the two locking bolts that we can see in this photo.

In photograph 15 the keylock has been unlocked and the boltwork retracted. Notice that the upper rectangular block pivoted down out of the way, while the lower rectangular block pivoted up out of the way. Without these blocks

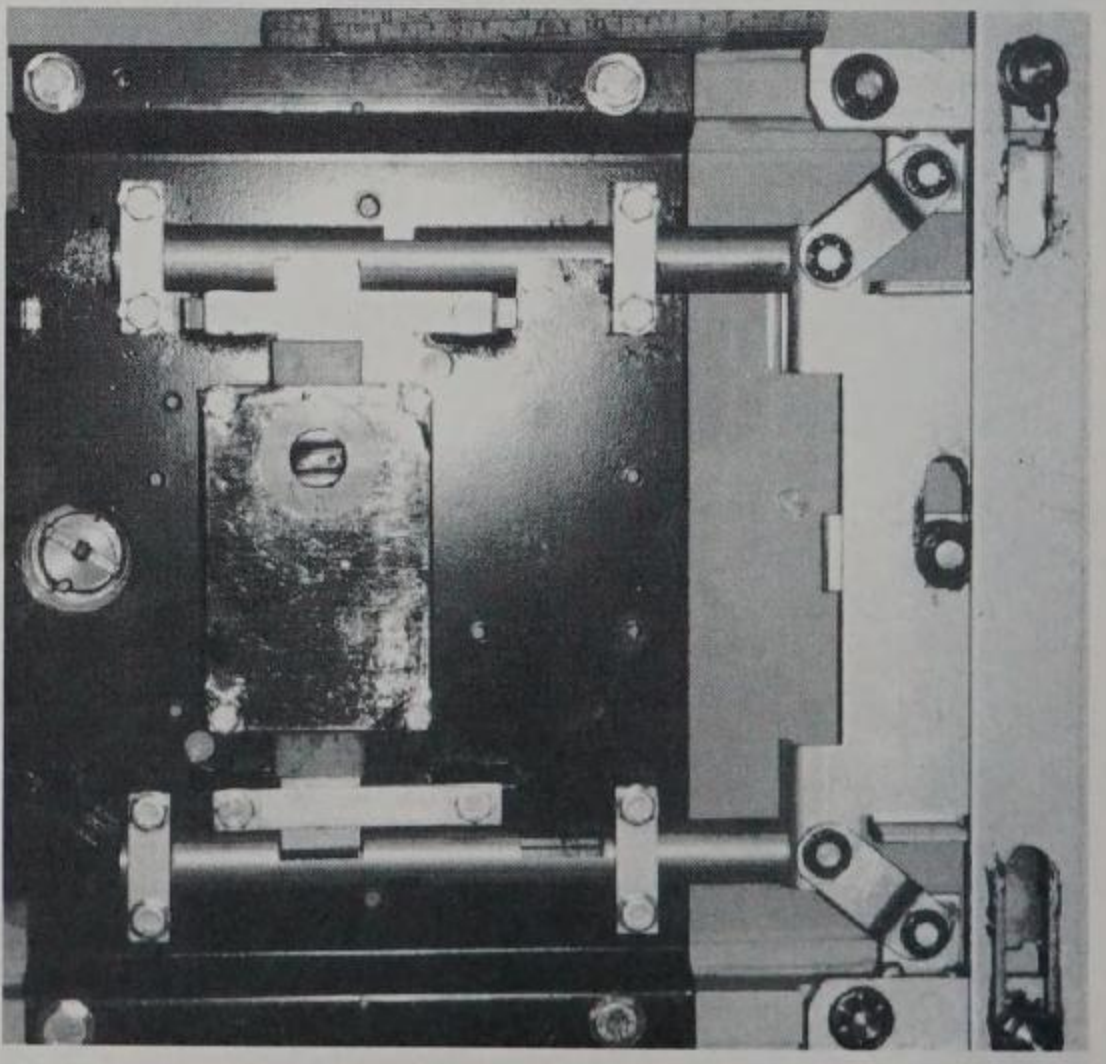


14. The Rosengrens ABN-1 keylock.

pivoting, the boltwork could not be retracted, and it certainly could not be side- punched.

Well, that completes our mini-tour of Owe, Sesam, and Rosengrens. I hope you enjoyed it. Thanks to Owe for providing the great photos. If any of you would like to drop Owe a line, you can write him at: Sesam Lasservice, Nordhemsgatan 29, Sweden.

See you next month.



15. The keylock, unlocked, and boltwork retracted.

by Dave Mc Omie

THE RIGHT TOOLS IN THE WRONG HANDS

"This was a nightmare and I was going to wake up at any moment, go out to the kitchen and have a bowl of Fruity Pebbles."

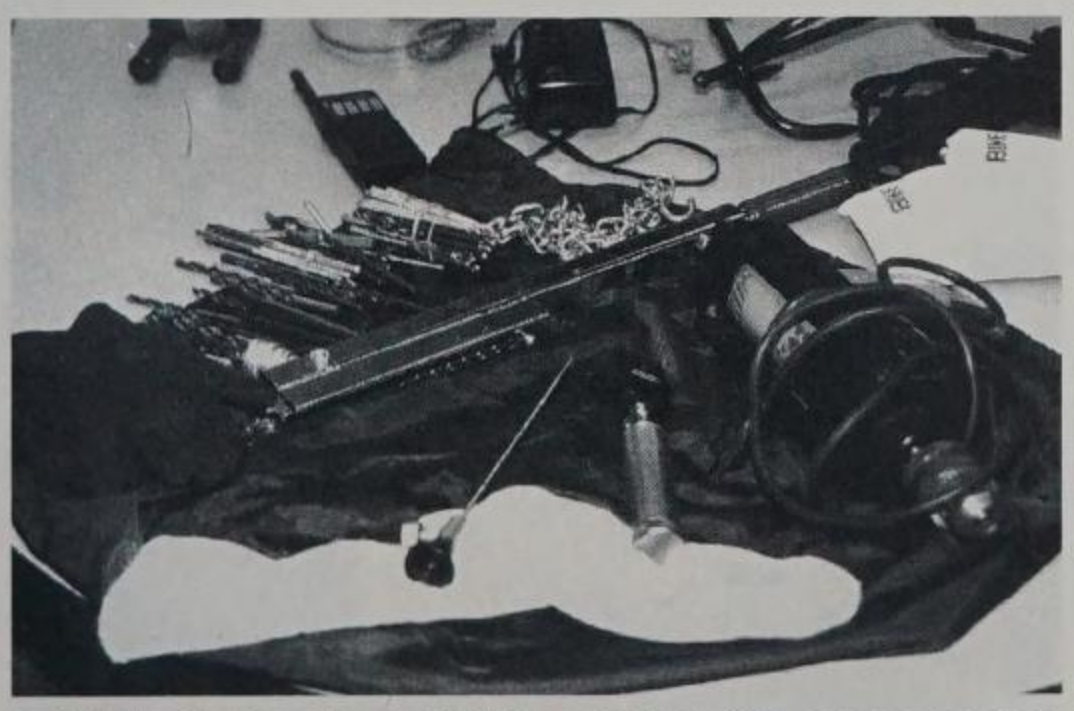
Since I began writing safe books almost eight years ago, my worst nightmare has always been that a crook would use one of my books to burglarize a safe. Well, that nightmare has become a reality. . . more than once. . . and by the same burglar.

It was a heck of a shock when I first found out. It was in 1988. I was at a presentation put on by Ed Barr, who used to investigate safe burglaries for the Los Angeles Police Department. Ed had a fantastic slide show of safe and vault burglaries and attempted burglaries that have occurred in the LA area over the past 30 years. He got toward the end of the slide show, and covering the antics of one Mr X, who had knocked over at least five safes in separate burglaries of California DMV offices.

Mr. X had worked as a locksmith, and had allegedly taken training courses from Lockmasters. Upon his arrest, police photographed his arsenal. Ed had slides, and up on the screen were tools such as a Lee Rig with Bosch Hornet, carbide bits from Lockmaster's and Strong Arm Security, and assorted hand tools. The crowd gasped. Then Ed clicked the button to show the next slide, and my breathing involuntarily stopped. Up on the big screen for God and everybody to see was my first safe book, *The National Locksmith Guide to Safe Opening*. I gasped. I couldn't believe it. It could not be true. This was a nightmare and I was going to wake up at any moment, go out to the kitchen and have a bowl of Fruity Pebbles.

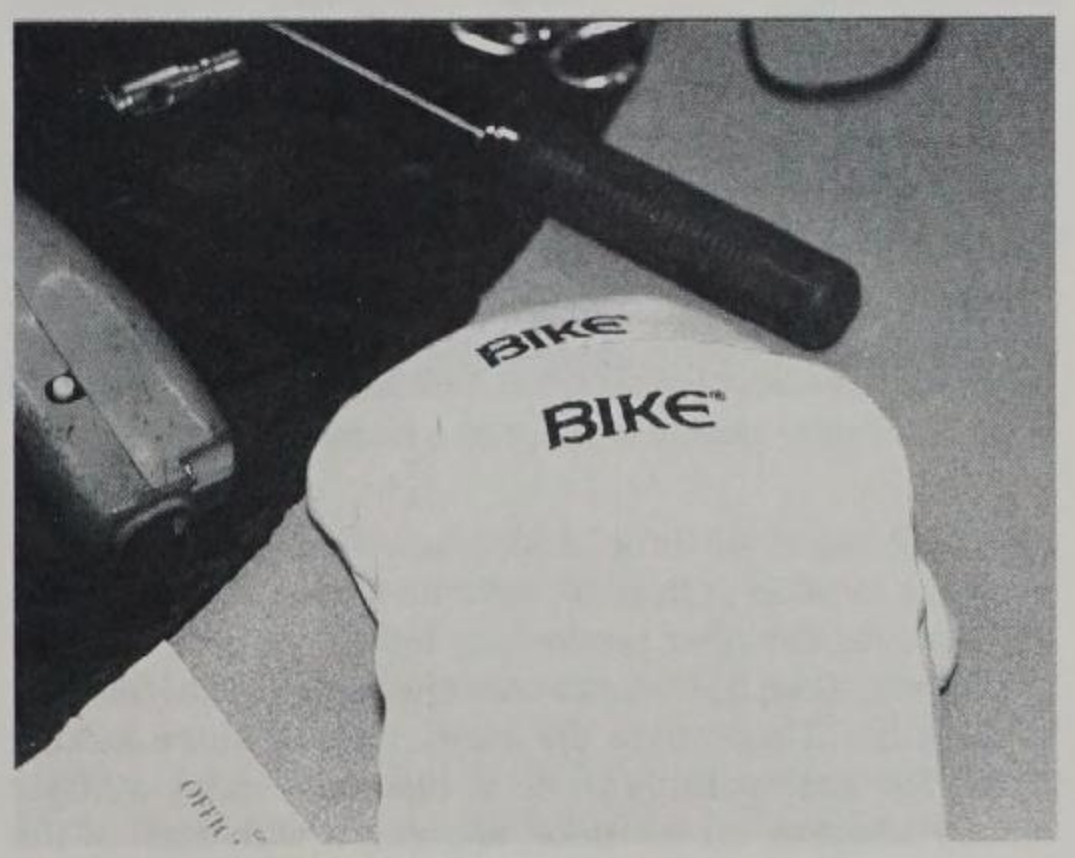
But it was true. A criminal had purchased first-rate safe opening equipment, including my beloved books, and had used the tools and information to burglarize a safe. But then I reminded myself that Mr. X had been legitimate and gone

1. Mr. X's bag of tricks starts with this Bosch drill and grappling hook.



2. Add to that, various drill bits, another drill, some scoping equipment...

3...a pry bar, ski mask and walkie talkie, and...



4. ...knee pads to make the job comfortable.

bad. He had started out as a locksmith, been trained in safes by Lockmaster's, and had made all those equipment purchases as a locksmith. There is nothing we can do, except to provide prisons for those who go bad.

Mr. X was convicted and sentenced in San Diego County. He served a few years and got out. . . to do it all over again, this time in Santa Barbara County. No kidding. He was convicted last spring, and many of us are watching to see how much time Mr. X will actually serve this time around. I don't want to appear too cynical, but there ought to be a daytime soap/satire called "The Revolving Door."

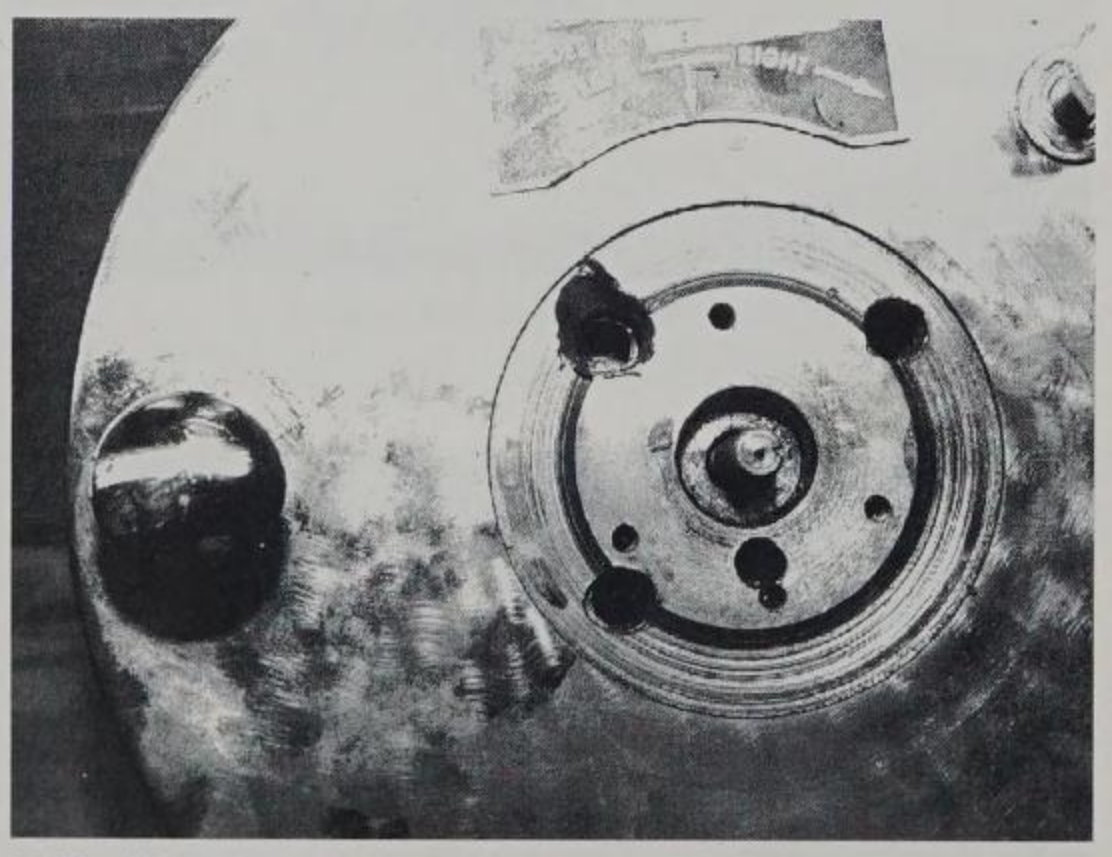
Once again, Mr. X was caught with loads of first-rate equipment. Photograph one shows his "black bag," filled with a Bosch 1194 VSR drill motor with extension cord, prybar, grappling hook with nylon rope, walkie-talkie, and loads of drill bits.

In photograph two we see his Lee Rig with Bosch Hornet, otoscope, borescope, and a bunch of carbide bits, some of them from Strong Arm Security.

In photograph three we have a close-up of the walkie-talkie and crowbar.

In photograph four we have a health-comfort item — kneepads for use when drilling in-the-floor safes.

Photograph five shows a Major round door that Mr. X apparently tried to triangulate and drilled a bunch of holes in. Triangulation is a process whereby you deduce the three possible locations of the fence stop (or dog pin, as Major calls it). This is usually done by drilling a small hole through the collar of the safe and inserting a wire. Now you rotate the



5. Mr. X's rather sloppy attempt at a Major round door safe.

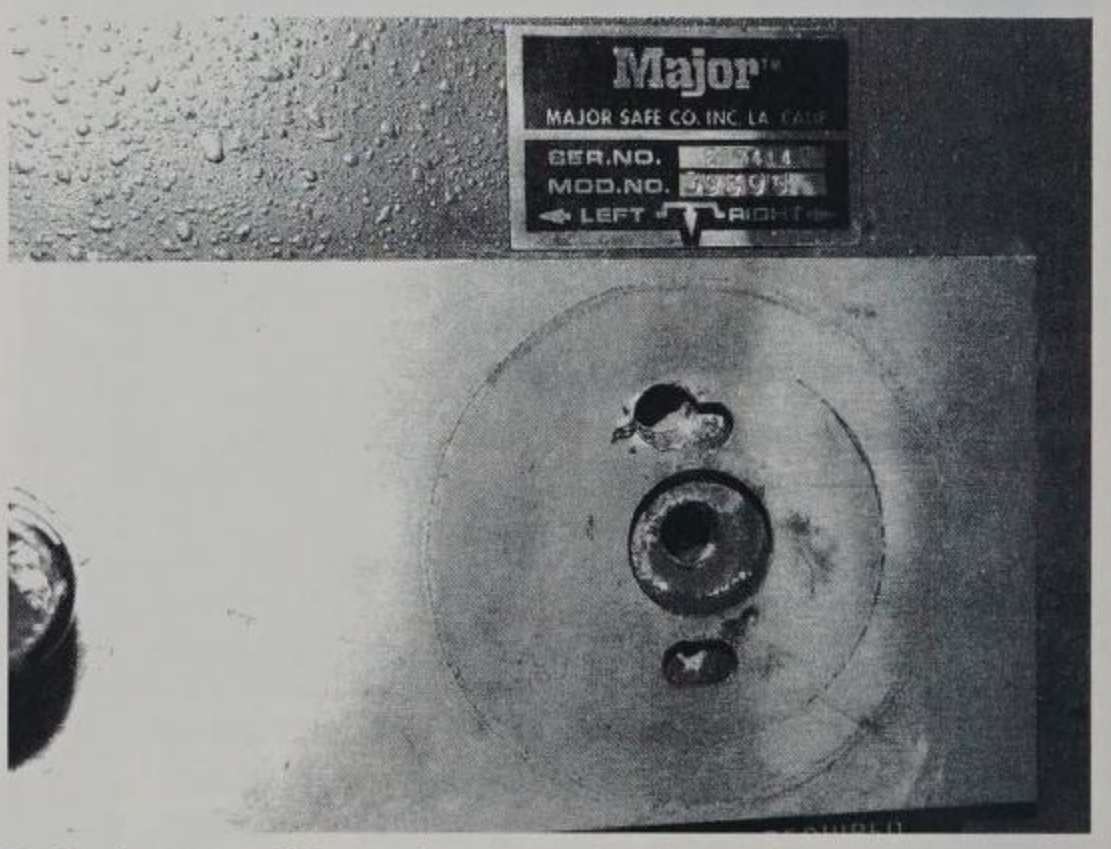
door until one of the three locking bolts bumps the wire. You mark the location of this bolt right on the door, and then do the same for the other two locking bolts. Now you will have a door with three lines drawn out from the center of the door to the edge. These mark the location of the three locking bolts. The easiest thing to do at this point is lay a Major factory template on the door, aligning it with each of the locking bolts and marking each of the three possible positions for the fence stop. Now you simply pick one of the three possible locations and drill a 1/4" straight down. If you don't hit a ball bearing, then go on and do the same thing at your second choice. And if you are like me, you will finally hit it with choice number three. Remove the ball bearing. This leaves you with a small hole going down to the dog pin/fence stop. Insert a 5/32" punch into the hole and punch the dog pin into the door. Now reach in with an ice pick and probe the lever around clockwise to start retraction of the locking bolts. Once they start to go, you can probe the actual bolt cam the rest of the way around, which carries all the bolts with it. If this poses a problem, and sometimes it does, you can enlarge the hole to make it easier to do your probing. The only problem with enlarging the hole is that it makes repair a bit more difficult, since you now have to weld the dog pin back in place.

Mr. X did a rather shoddy job of it, but he is obviously not very experienced and was probably a bit nervous under the circumstances.

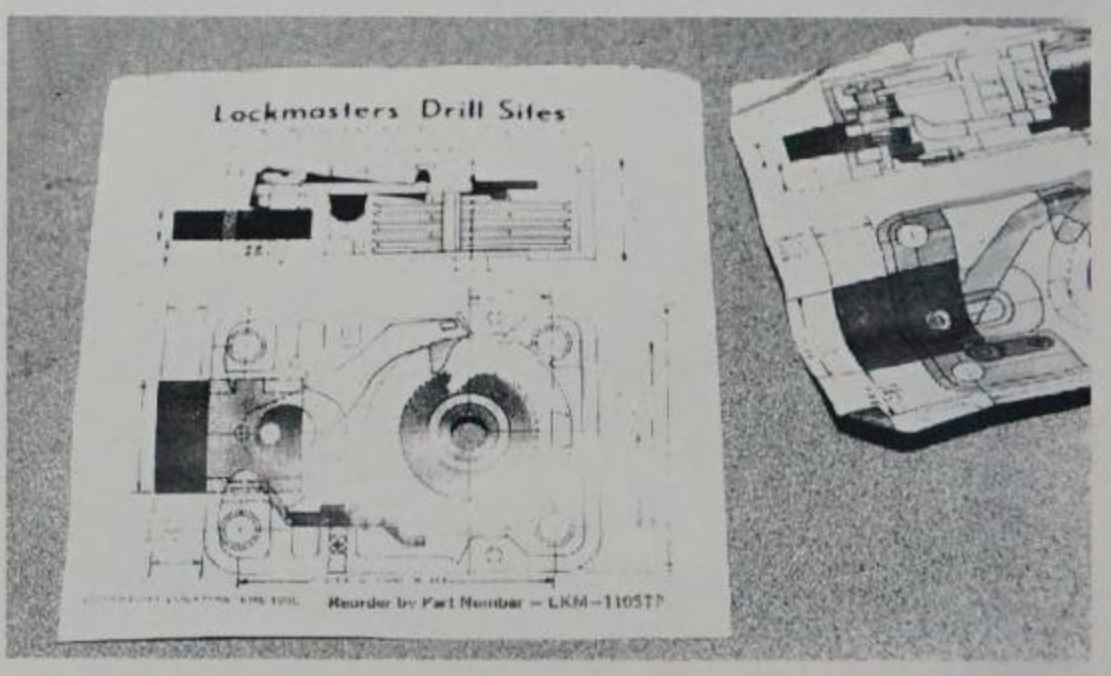
Photograph six shows a Major fire safe that Mr. X drilled right at the drop in point of 97 x 7/8".

How did he drill it at drop in? The answer is in photograph seven: He used a Lockmaster's drilling template.

And how did he know what lock was in the Major fire safe, and which way it was mounted? The answer is in

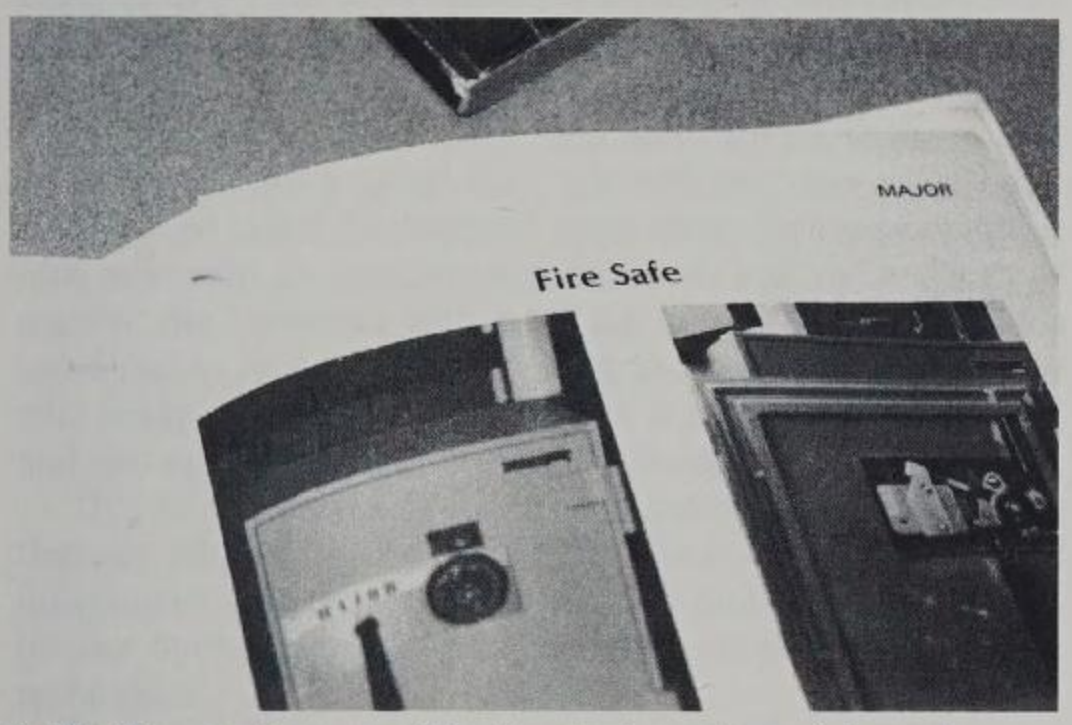


6. And some of his work on a major fire safe.



7. This guy had all the tools including templates from Lockmasters and...

8. ...my books (aargh!).



9. Mr. X even dog eared the books to make quick work reference while working on a safe.

photographs eight and nine: He looked it up in my books.

Photograph nine particularly galls me. Look carefully and you will see that Mr. X dog-eared page 147 out of my first book. Why? Well, the safe that he burglarized (*see photograph 6*) and the safe in the dog-eared page are nearly identical. They are both Major fire safes. Presumably, he scouted the place first, saw the safe, and then located the information in my book. Dog-earing the page just made it easier to go to it when needed.

Friends, we can require someone to prove they are in the lock and safe business before allowing them to purchase tools and books. But this is far from foolproof. First of all, in many states there is no law against a person with a felony conviction for burglary, from working as a locksmith upon his/her release from prison. And secondly, there is nothing anyone can do to prevent a locksmith who wants to go bad from going bad. Well, on second thought, there might be one thing: Let's stop guys like Mr. X from serving such ridiculously short sentences and getting out to commit more mayhem. Let's lock that revolving door in the closed position and throw away the key. If that doesn't work, then I am moving to Mars. Rumor has it that Martians don't commit crimes. Anyone want to come with me?

Many thanks to Merrill Hoffman of Santa Barbara Locksmiths for providing the photos of Mr. X's arsenal. How Merrill got the photos is a mystery to be solved at a later date.

by Dave Mc Omie

IDENTIFY, IDENTIFY, IDENTIFY

"Many unnecessary holes are drilled into safes because too many of us are guessing instead of identifying."

Ray Kroc, founder and genius behind the McDonald's hamburger empire, had a simple motto: Advertise, Advertise, Advertise. With regard to safe openings, I have a similar motto: Identify, Identify, Identify.

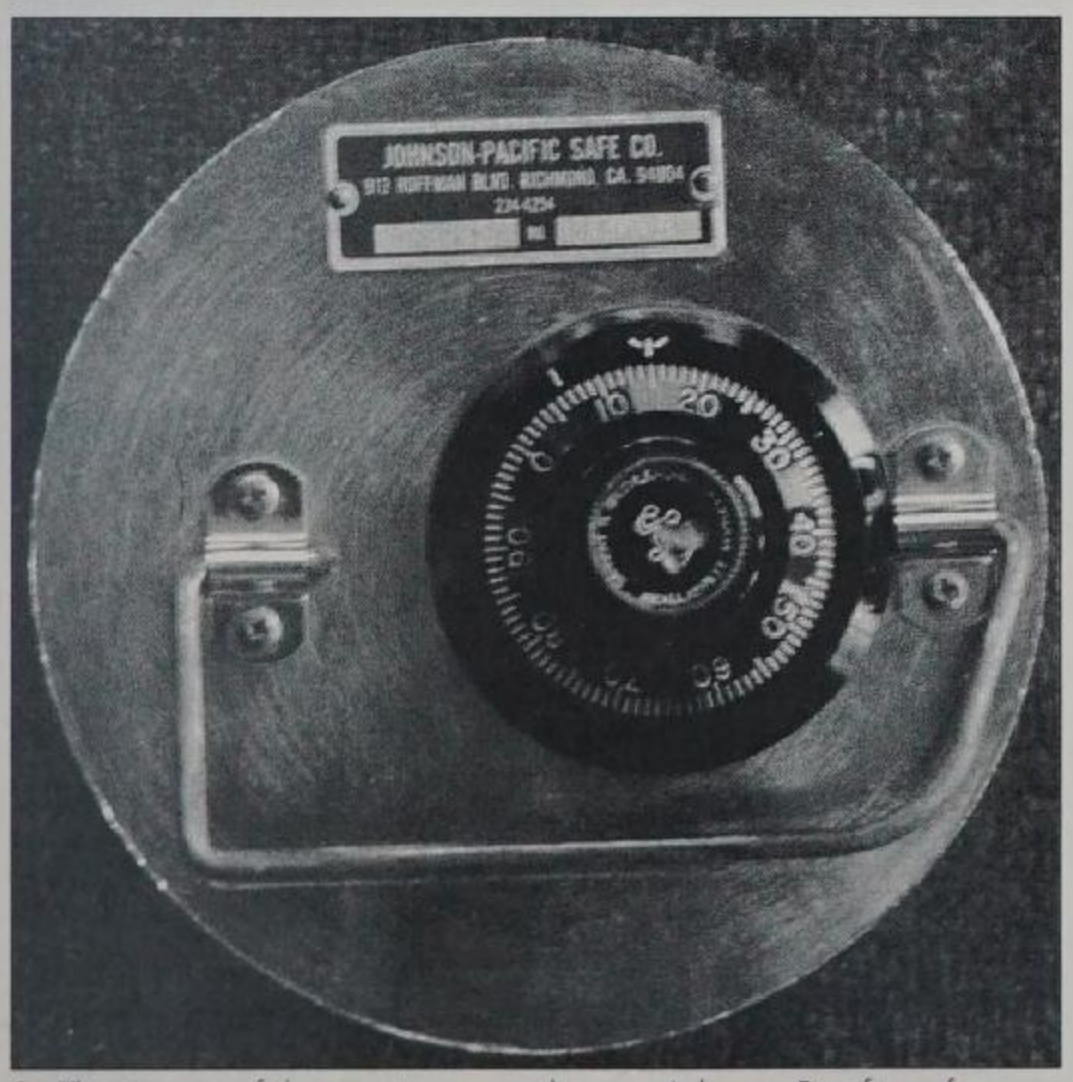
Many unnecessary holes are drilled into safes because too many of us are guessing instead of identifying, and using the by gosh and by golly method of drilling: "By gosh, I'll drill it right about here. OOPS, that was wrong. Well then, by golly, how about over here. . . and there. . . and here." Ad nauseam.

Recently I saw a round door safe with over *thirty 1/2"* holes in it. The so called "technician" spent three days providing this little safe with air conditioning, and then had the audacity to present the customer with a bill for over $2,000.00!!! This is indefensible. And it is embarrassing to all of us in the industry who really do try to do the job right. It makes me mad as hell and also makes me think twice about licensing.

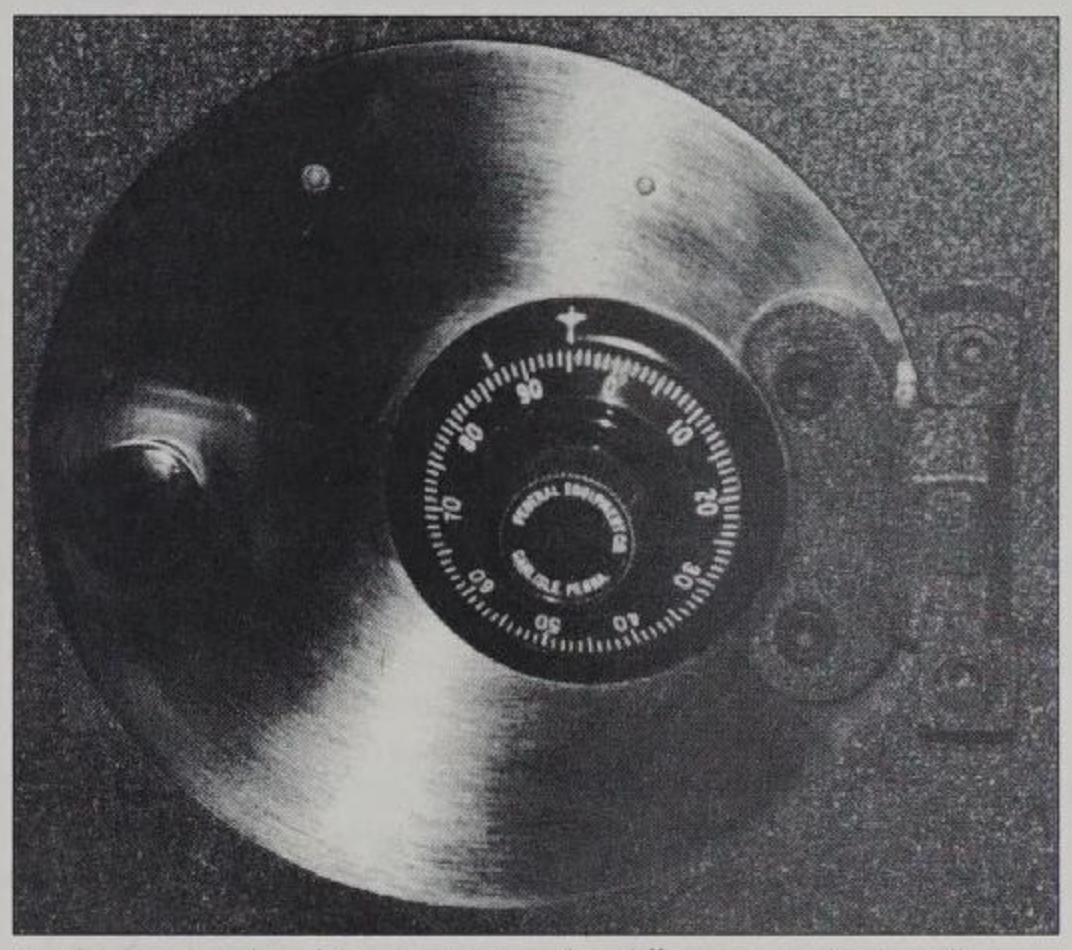
This month we will look at two Johnson-Pacific round doors that are similar on the outside but have important internal differences that require different drill points. We will cover proper opening procedures based on proper identification techniques.

Photograph one is of the most commonly seen J-P round door. This one is a 7-1/8" lift-out C-rated door, meaning that the door is not hinged, but lifts out of the safe body, which is usually a steel tube buried in concrete. The C-rating just means that the door is at least l" in thickness. Notice the wire handle.

Photograph two is the hinged version. It is a 7-1/8" C-rate door that swings open on a hinge. Notice that this door uses a small pull handle.

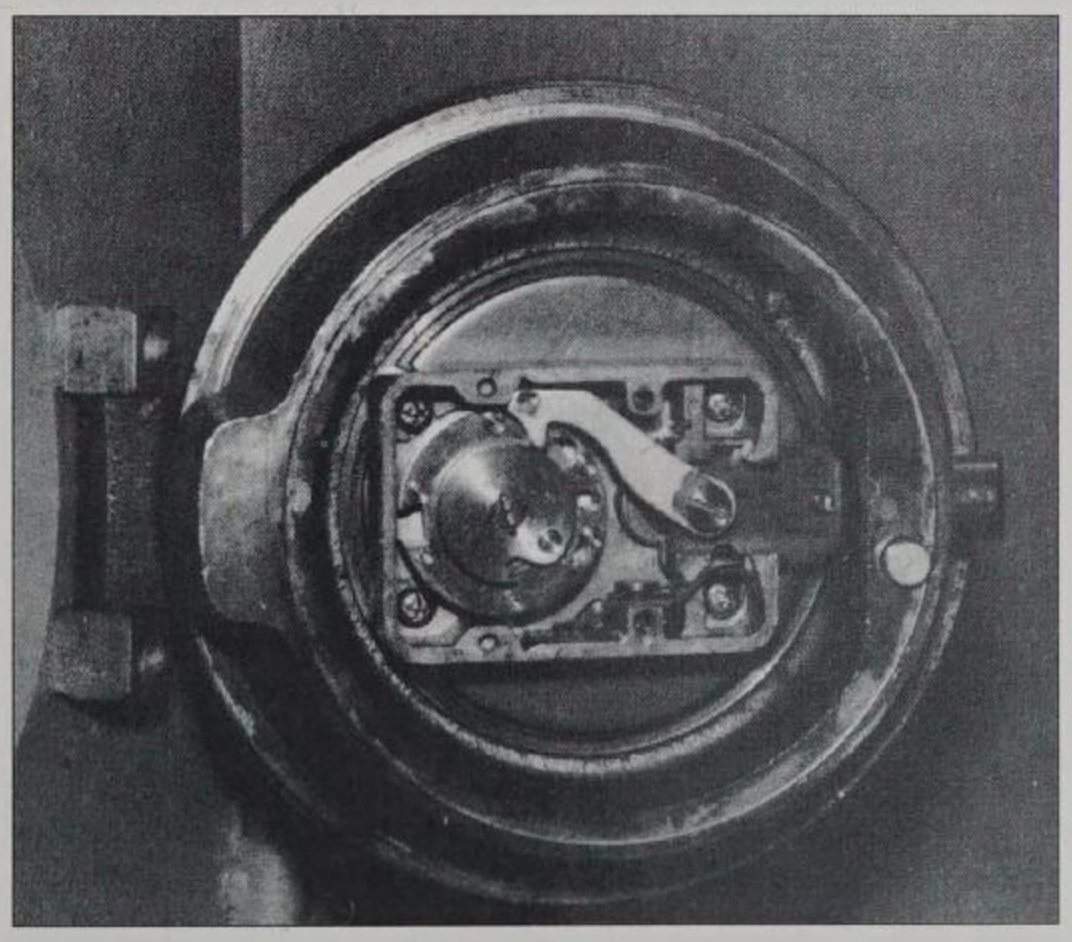


1. This is one of the most commonly seen Johnson-Pacific safes. Notice this version does not have hinges.



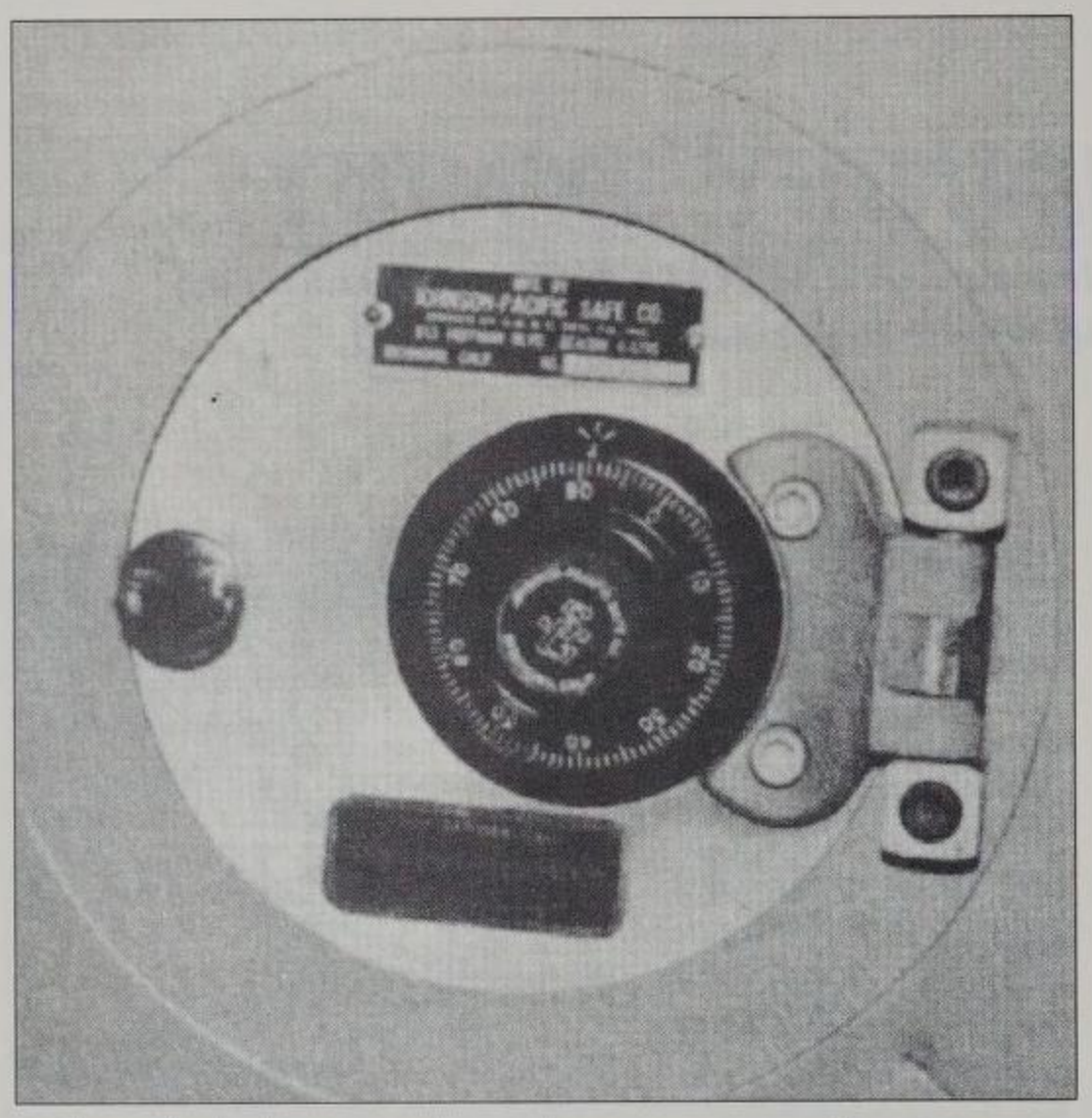
2. This version has hinges. Notice the difference in the handles between the two versions.

Photograph three shows us what the inside of both doors looks like. A RH-mounted Sargent & Greenleaf R6730 is attached to a round door bolt. The attachment is made via a wire hook on the end of the door bolt that fits into a hole in the lockbolt.



3. The lock and bolt work.

In photograph four is a hinged door that looks very much like the previous one. Like the previous hinged door, it is also C-rated with a small, front-reading S&G dial and small pull handle. The hinges are almost identical. But there is one

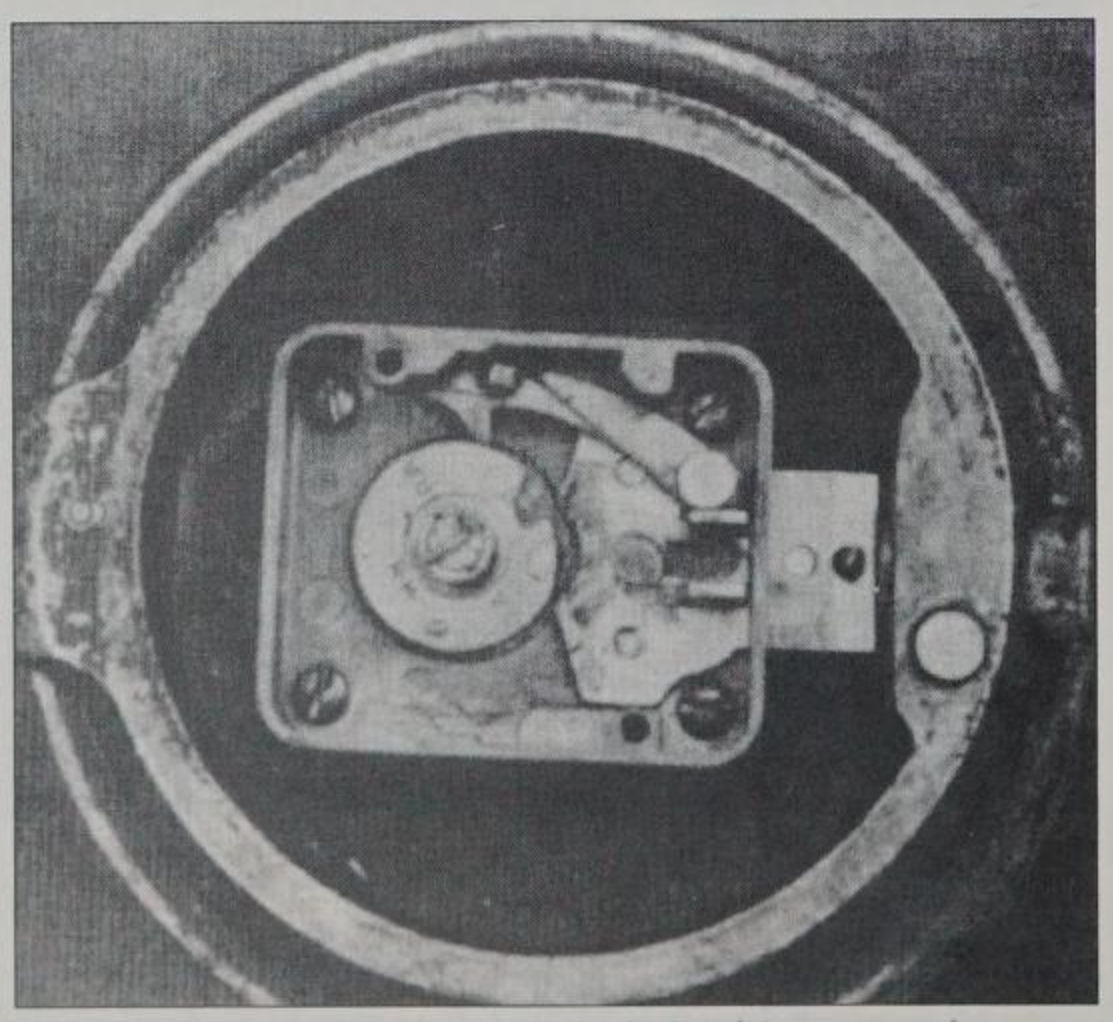


4. This safe looks very similar to the previous ones. The minute differences seen on the outside mean a whole lot more when trying to open them.

important external difference that we can use to differentiate these doors: this one has a diameter of only 6-1/4", whereas the previous door is over 7". This is the identification tip that can save your bacon on these two doors.

What difference does it make? Well, let's look inside the 6-1/4" door and see what the difference is before we get into the ramifications of the differences. Photograph five shows the inside of the 6-1/4" door. At first glance the 6-1/4" door and the 7-1/8" door look very much alike. But look closely at the lock. This is not a 6730. It is the little brother to the 6730, the 6709. And the differences in these locks are important enough to dictate different drill points for effecting professional openings.

The 6730 is a rear-drive lock, whereas the 6709 is a front



5. While at first seeming the same, the locks of these two safes are different. Looking inside the door of the smaller, 6-1/4" door unit reveals an S&G 6709 lock versus the larger units 6730.

drive lock with the wheels mounted on the back cover. Consequently, when you look into a drilled hole of a 6730, you see the first wheel first, the second wheel second, and the third wheel third; but when you look into a drilled hole of a 6709, you see the third wheel first, the second wheel second, and the first wheel third. This makes lining up the wheel gates on a 6709 much more difficult than on a 6730.

Because the 6730 is a rear-drive lock, you can drill at the drop in to line up the wheel gates directly under the lever fence. However, you cannot do this on a 6709, because you cannot see the fence! If you drill at drop-in on a 6709, all you will see is the body of the lever. More on that when we get to drill points.

Other differences:

The 6730 has an internal relocker; the 6709 does not.

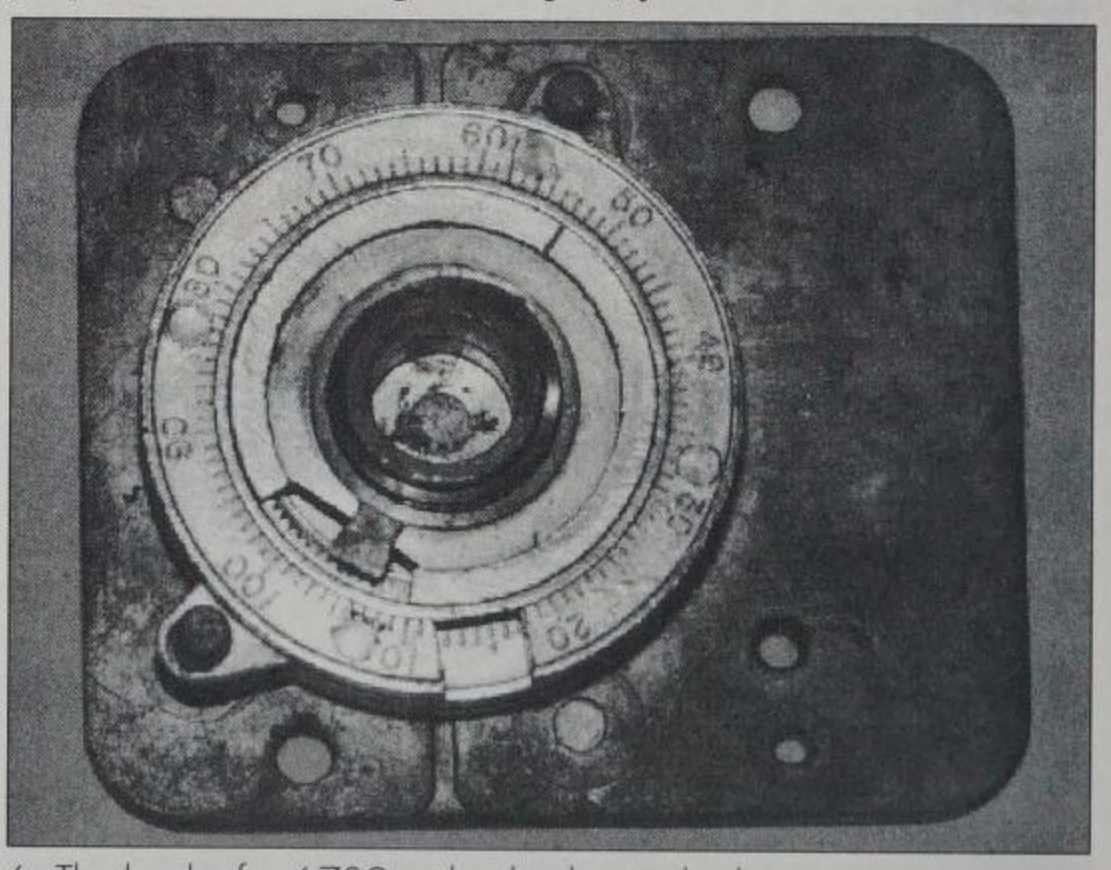
The 6730 uses three key-change wheels, whereas the 6709 uses three mesh-change wheels. Consequently, you can drill to scope the change key hole of a 6730, but you can't on a 6709 (because the 6709 doesn't have one)!

The 6730 uses small wheel spacers, whereas the 6709 uses very large wheel spacers. Consequently, there are fewer bad places to drill a 6730 than a 6709. (*Photograph six shows the back cover of a 6709 with wheels attache*d.)

O.K., now that we know the external and internal differences, let's talk opening techniques.

Both the 6-1/4" door and the 7-1/8" door use S&G dials that are easily pulled with a Lockmasters dial puller. The 7-1/8" door can be drilled right at drop in—97 x 7/8"—to line up the wheel gates under the fence.

There are two drill points for the 6-1/4 " door with the 6709 lock. One is to drill a scope hole at l" LC, 3/8" down. This is fine on a functional lock, but isn't much help on a malfunctioning lock. If you have a malfunctioning lock that will not yield to proper troubleshooting techniques, you can drill the fence off



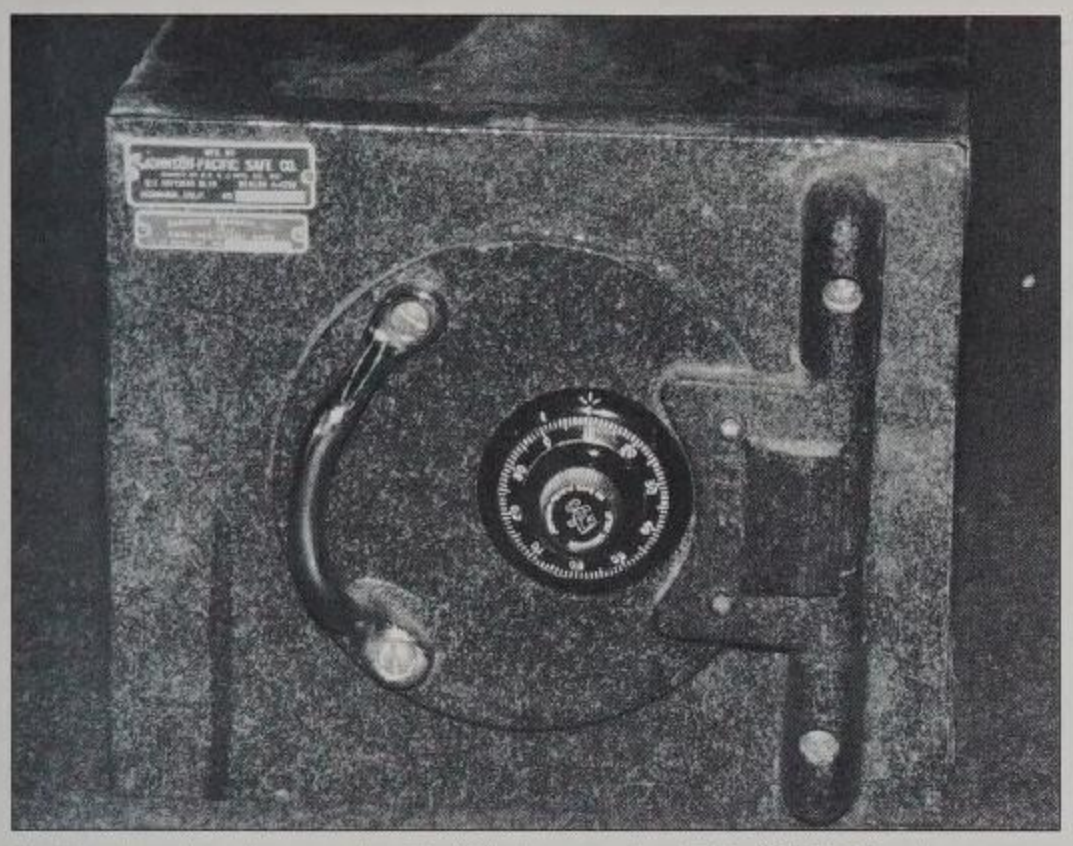
6. The back of a 6709 with wheels attached.

the lever at 97 x 1".

The external relocker drill points are also slightly different. The relocker drill point on the 7-1/8" door is 3-5/16" LC, 1/2" down. The relocker drill point on the 6-1/4" door is 3-11/16" LC, 7/16" down.

To neutralize one of these relockers, drill your hole at the appropriate drill point until you hit the relocker spring. I like to use a 3/8" hole for this since there is no hardplate to contend with. Hook and pull the spring out of the hole. Now you can either use a magnet to pull back the relocker, or you can try to fish it back with a probe. Once the relocker has moved far enough toward you, there will be nothing blocking the door locking bolt, and you can retract it.

Thus far we have talked about distinguishing the 6-1/4"



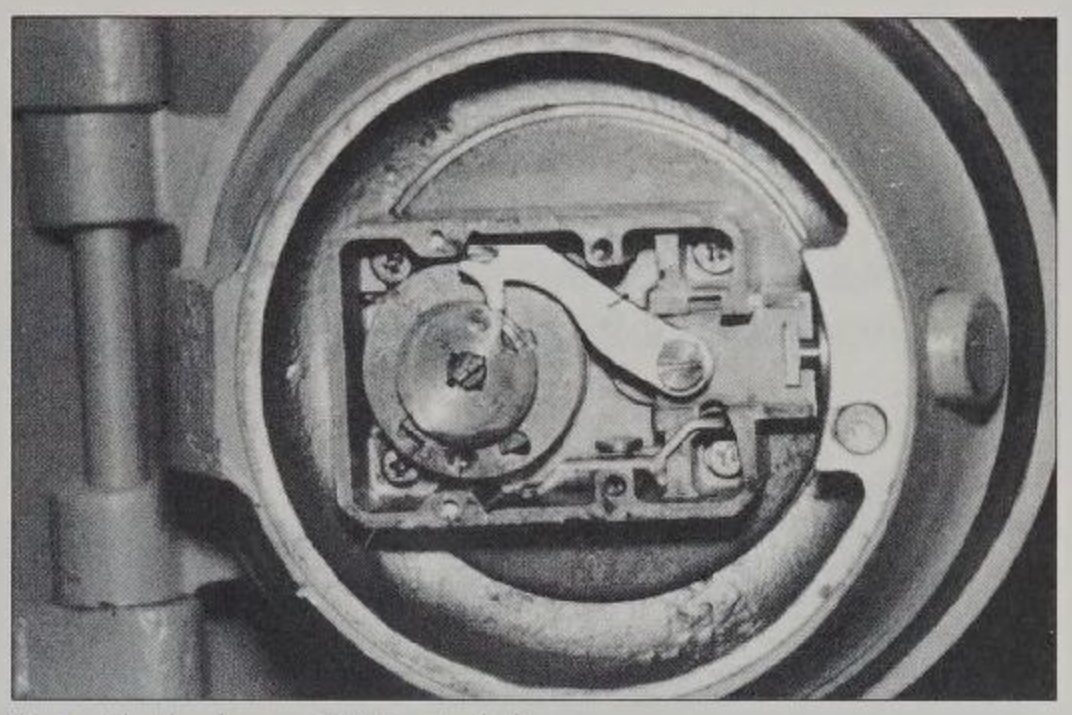
7. The big brother to the 7-/8" door is the 7-1/2" TL15 door.

door from the 7-1/8" door. This is important because they use different locks. The relocker drill points are just slightly different, but the truth is that one will work for the other.

Not so when we compare the 7-1/8" door to its bigger brother, the 7-1/2" TL-15 door shown in photograph seven. Notice the much stouter handle.

Photograph eight takes us inside. As you can see, it looks very much like the 7-1/8" door. It has a RH-mounted Sargent & Greenleaf R6730 with a round door bolt attached to it. Notice that this door uses a "T" shaped cut-out in the lockbolt, rather than a simple hole.

The 7-1/2" door is thicker, but has the same drill point (97 x 7/8") as the 7-1/8" door. The only important difference is the



8. Inside the larger TL15 rated door.

relocker drill point. The relocker drill point on the 7-1/2" door is 3-1/8" LC, 1/2" down. This piece of information will save you from making the same boo-boo that I made one time long ago.

I was called out on a badly burglarized 7-1/2" door. This was years before any of those great National Locksmith safe books were out, and before the author even knew how important some of the differences were. So I drilled it at the same spot that I had drilled relockers on C-rated doors. It was, of course, an air-hole. I had to drill another hole right next to it, and it made the repair a real pain-in-the you-know-what.

You won't have to make that mistake. Take a few minutes to use your reference materials and make proper identification. It will save you many hours of fruitless drilling, and it just might save you a valued customer who is impressed with your professionalism. That's what this game is all about.

See you next month.

by Dave Mc Omie

A MEILINK MINI-HOLE

"The latest victory for the spaghetti scope occurred when I was called out to a mansion to open a safe, make and model unknown."

I am addicted to drilling tiny holes and opening safes with my spaghetti scope. Yep, safe drilling is fun again!

The latest victory for the spaghetti scope occurred when I was called out to a mansion up in the West Hills to open a safe, make and model unknown.

I knew these people had bucks when I saw two Rolls Royce's parked outside their seven-car (yes, 7-car) garage. If the Silver Clouds were parked outside, I wondered what was parked *inside*. I was destined never to know, because the housekeeper, who introduced herself as Emma, spotted and escorted me into McMaster Manor. (Hmmm. . . I wonder if I can name my podunk dwelling McOmie Manor?)

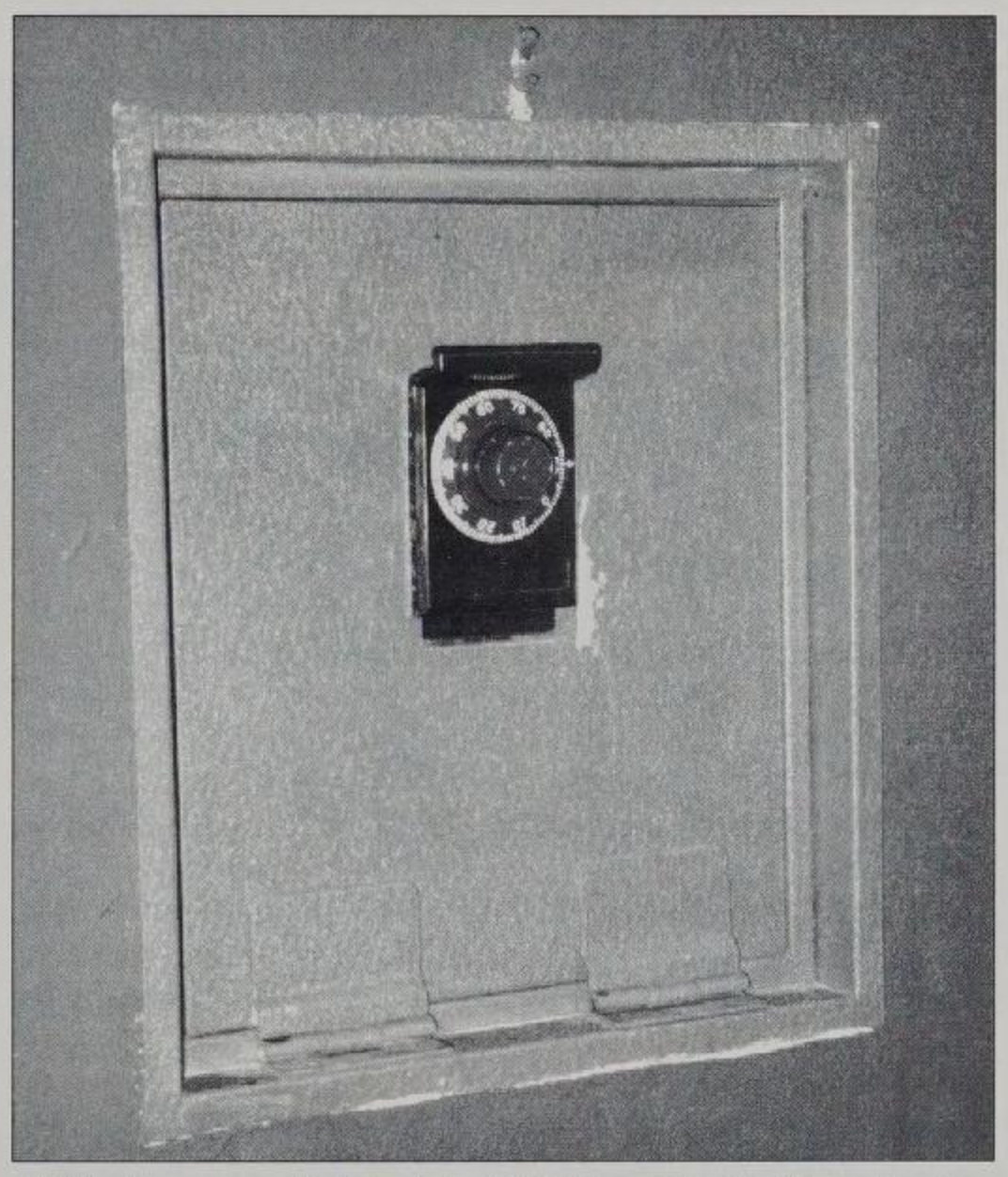
Emma requested — you know the kind, a request that is really a polite demand — that I remove my shoes. I panicked. Had I worn socks? If so, were they clean? Did they match my outfit? For that matter, did my outfit match? Did I look like a bum? Looking down, I was relieved to see that under my black penny loafers were designer nylon socks. What a stroke of luck. My grungy old Nikes had gotten wet last night playing basketball with the kids, so I had put on real shoes this morning.

Down the long hallway, over the plush snow-white carpet, up the winding staircase, down the hall, turn left, through two doors, turn right, up three stairs to a sitting room outside the master bathroom, and there it was: A beautiful painting. I looked at Emma, and she looked at me. And then she realized that I didn't know. So she reached out and lifted the painting off its hook to reveal. . . a Meilink *wall safe?* (*See photograph 1.*) Something was wrong here, and it took me a minute to figure it out what it was. The builder, or whoever installed the safe, had turned it 90 degrees, probably to fit it in between the wall studs. This put the dialing index on the right side of the dial rather than on top.

I was surprised that anyone with his and her Rolls Royce's parked in the driveway (not in the garage) would settle for a simple wall safe. But then again, as all of us in the business well know, people are amazingly cheap-minded when it comes to security.

I engaged in a few moments of tiddly-winks, I mean manipulation, before I broke out the Makita cordless drill and a 1/8" drill bit. Truth is, I *wanted* to drill. Makes me feel like a brain surgeon to perform a successful operation with such a small hole. It gives me a rush, and it's been a long time since opening a safe gave me a rush.

But before I could drill, I had to figure out *where* to drill. Since the dial was not right at the edge of the door, I knew that the lock was not a simple spring latch, but that it had a



1.What's wrong with this picture? Nothing, this Meilink wall safe was turned 90 degrees and installed hinge side down.

real boltwork. And since there was no bolt control handle, I knew that the dial retracted the boltwork.

Meilink has used two basic locks to do this: the Center Manufacturing copy of a 6709, and the little Federal peanut lock, similar to an S&G 8100.

I guessed that this one had the peanut lock. So I turned my *National Locksmith Guide to Safe Opening Volume Two* to pages 110 and 111, and browsed the drilling options for the peanut lock. Option one says drill a scope hole. But the drill point given requires removing the dial, and these dials are a pain to remove when the door is locked. Nah.

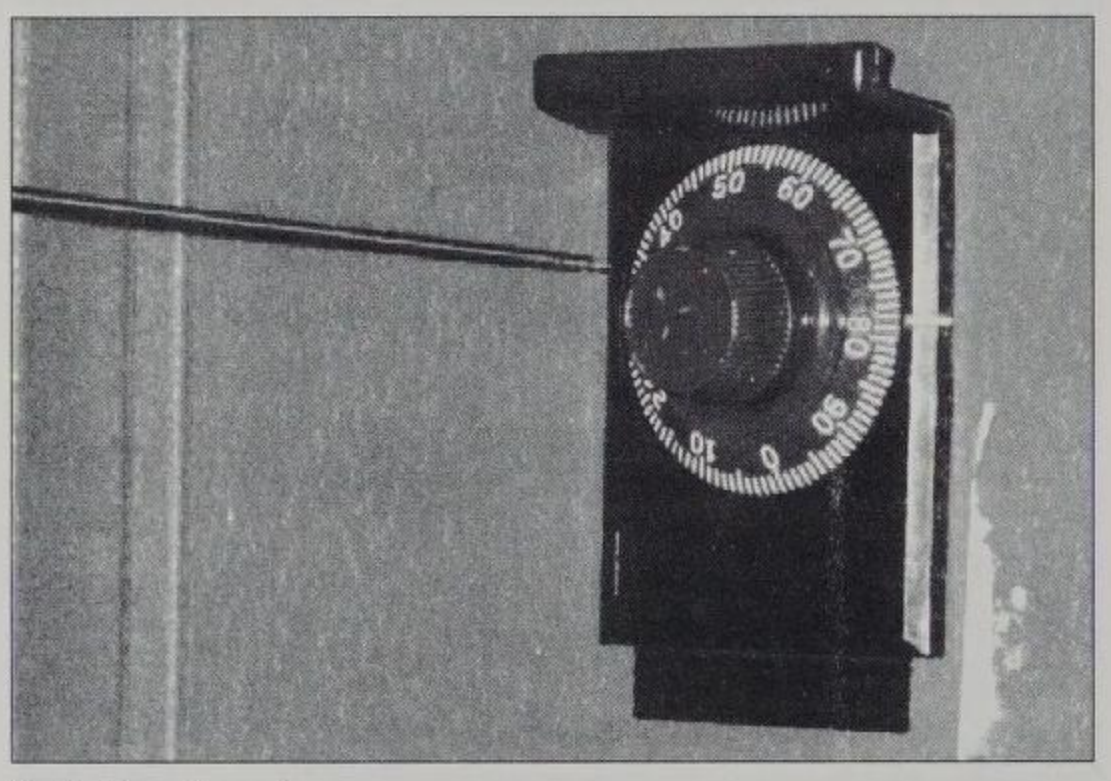
Option two says to drill for the connection between the lockbolt and the boltbar. There is a little peg on the boltbar that engages a hole in the lockbolt. Drill the peg out, slide the boltbar over and the safe is open. Right, but the repair is yechhy. Nah. Option three says to drill out the two lock mounting screws. The dial/ring assembly has two long screws attached to it that go through the door and hold the lock on via two nuts on the inside. You can drill through the dial and ring, drill away where the screws attach to the ring and push the lock into the safe. This works well enough, but you have to have a replacement dial, which I did not have.

Nah.

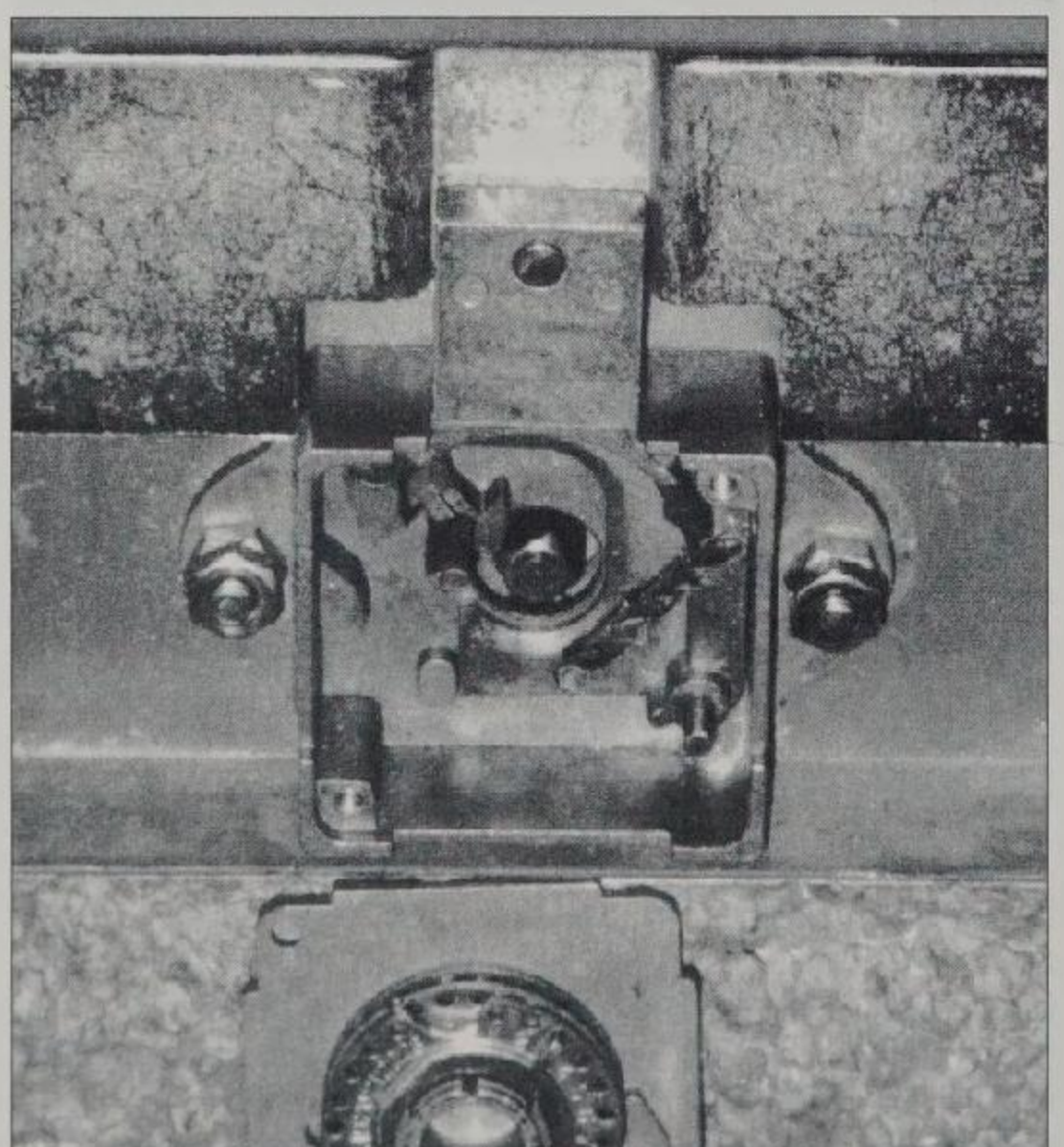
So what do you do when a dumb safe book author doesn't provide you with a drill point that you like? Improvise! Studying the photo on page 111, which is a close-up of the lock, I figured I would drill in at an angle from just outside the ring at about the 9 o'clock position. This should bring me into a nice open spot in the little lockcase — a great place for a mini-scope.

So I chucked the little drill into the little drill motor and drilled a little hole into the little safe. A warning to any of you who are thinking of trying this: Go slowly, or you will break the drill bit. Photograph two shows the position of the hole, with the long 1/8" drill bit sticking out.

I inserted my spaghetti scope into the hole. It was — I never tire of saying this — right on da money. I lined up the wheel gates one by one, and recorded each number as it came up on the dial. Now I had to transfer the wheel gates to drop-in.



2. Drilling the safe.



3. Inside the lock with the back removed.

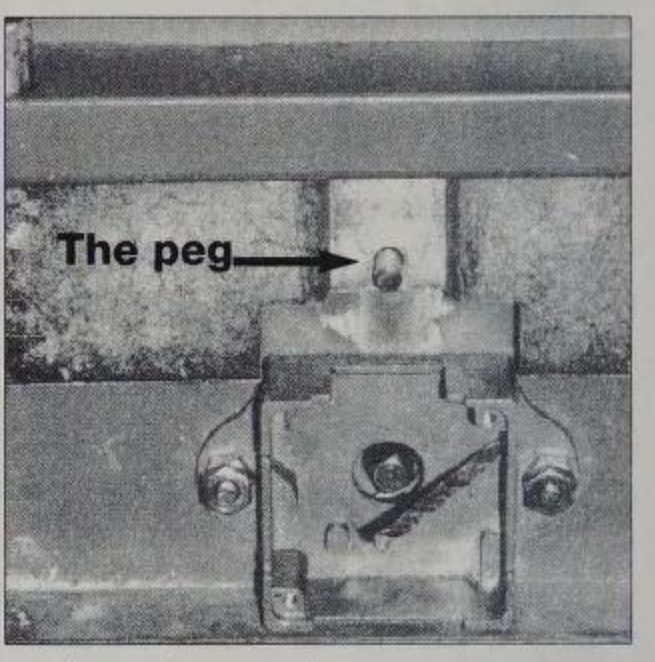
So I transferred. And transferred. And transferred some more. Gawd, sometimes I *hate* transferring. What is going on? At this point, I began to wonder if there was a malfunction in the lock. Mr. Silver Cloud had told me it was a lost combination, but I wonder.

Nope, I told myself. The only malfunction here is with the safecracker. And then I realized what had happened. I had forgotten that this door was turned sideways, and didn't rotate my drill point 90 degrees. I hadn't penetrated into the nice open spot in the lockcase; I had drilled through the lockbolt guide assembly and was about 45 numbers from drop in, not 20.

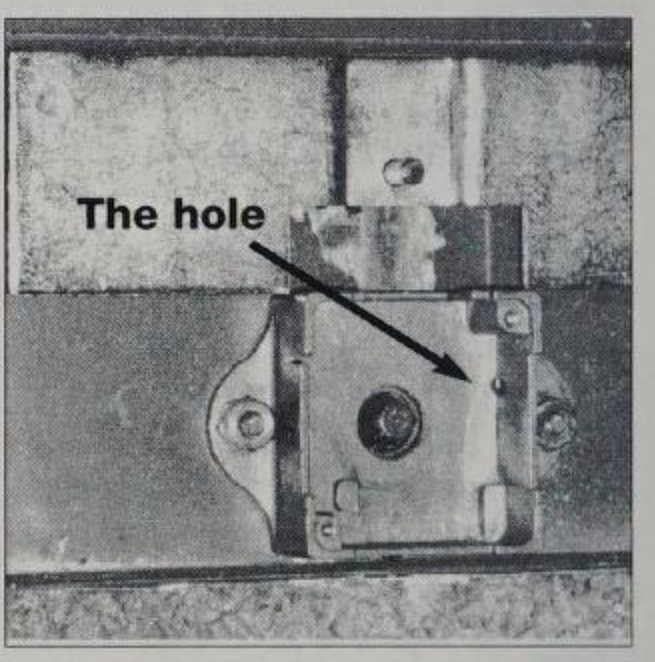
Sure enough. When I made the correction to the numbers I was dialing, it dropped in and opened on the second try. Photograph three shows the inside of the door, giving us a close-up of the lock with back cover removed. You can see the drill bit sticking through on the right side of the lockcase. You can also see the lever dangling toward the square spindle. Below the lock is the back cover with wheels attached.

In photograph four I have removed the lockbolt and lever. You can see the drill bit coming through at slightly more than a 30 degree angle. Notice the peg on the boltbar. This is the peg that engages into the hole in the lockbolt.

Photograph five gives us an angled view into the lockcase. We can see the hole that was drilled into the lockcase. Notice that the hole is right on the edge of the lockcase. A little luck



4. This is the peg that engages into the hole in the lockbolt.



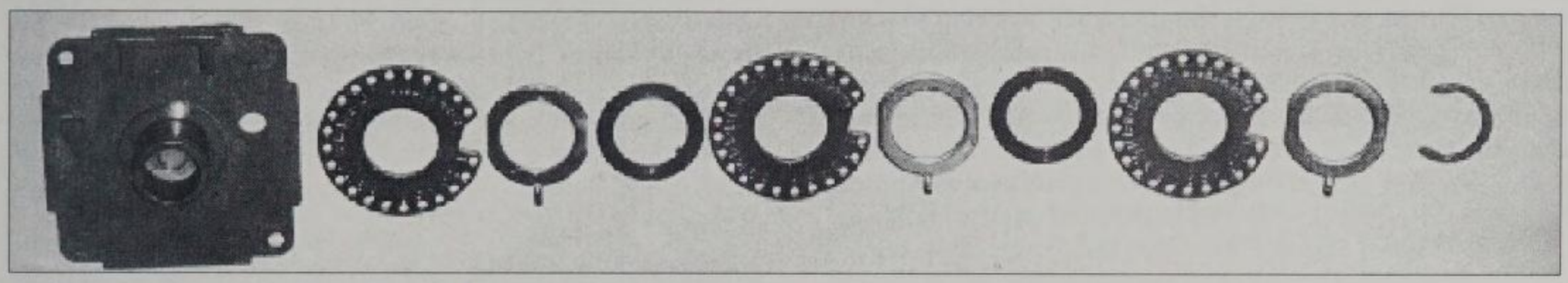
5. With the lock contents removed, the drill hole is visible.

6. The back cover with the three wheels mounted on it.

was involved here. Had that hole been at a little less of an angle, it would have come into the lockcase too high to see the wheels, or it might have missed the lockcase altogether.

Photograph six shows the back cover with the three wheels mounted on it. If you look closely, you can see the peek-hole that is provided by the lock manufacturer. This peek-hole allows you to read out the combination after a combination change. It is a real help when you have a lock whose numbers on the wheels don't correspond to the actual opening numbers.

Well, I filled the tiny hole with Steel Stick (great stuff), reassembled the door, and turned to Emma, who hadn't let me out of her sight. I traded her the combination in a sealed envelope for a respectable (to me) amount of cash. I didn't like it, not having someone try the combination before I left, but there was nothing I could do about it. I told Emma that if there were any problems with the King or Queen opening the safe, to call and I would try to assist them over the phone. She nodded, turned and guided back me through the maze, down to the foyer where I retrieved and reinstalled my loafers. We waved good-bye.



7. There are 11 components to the wheel pack.

The peek-hole also provides us with a nice opening option if the safe is not mounted in a floor or wall. We can drill through the side of the safe and scope the peek-hole.

In photograph seven, the wheel pack has been disassembled and laid out for our inspection. For some reason, I forgot to remove the washer from the bottom of the wheel pack. There are a total of 11 separate parts here, including the washer that is still around the bottom of the wheel post. These are tiny hole-change wheels with fixed flys.

As I walked between the Rolls', I wondered if I had made a bum career choice. This guy owns a hotel chain and probably has more money tied up in whatever is in that seven car garage than I will make in my whole life. But is he happy? I guess I'll never know. But I know that I am. And *that* money can't buy. See ya next month.

As I re-read the closing paragraph, I am a little embarrassed at the tone. The intent was to convey optimism, not a crass appeal to class envy. For all I know, the owners of the his-and-her Silver Clouds are basking in earthly bliss. My friends,the point is to live a good life. Treat all persons with dignity and respect, live up to your duties and obligations, and be the best you can be. That is the secret to enduring happiness.

by Dave McOmie

TACKLING THE MOSLER JEWELER'S CHEST

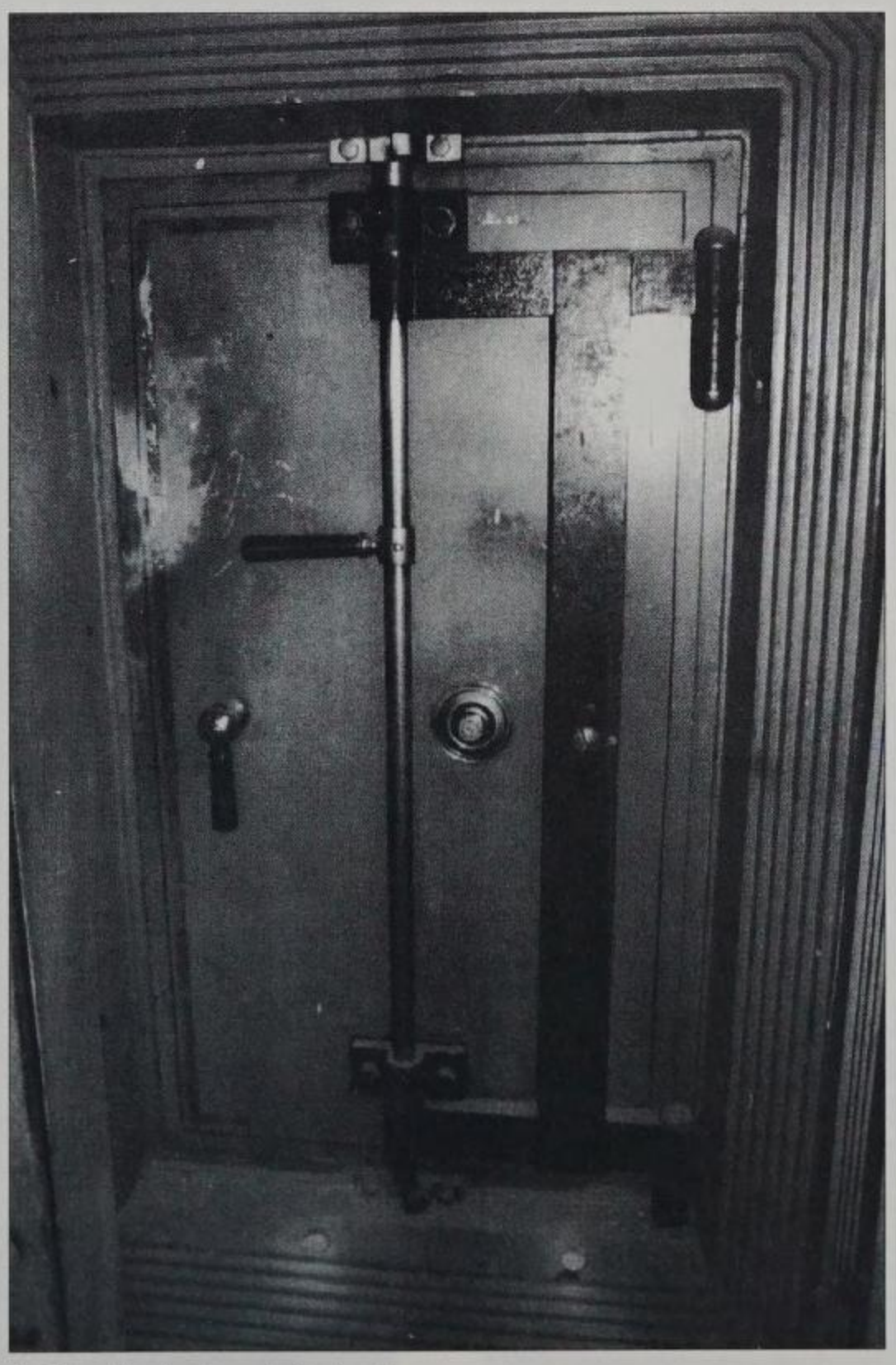
"Rather than mess around with manipulation, he approached the job like a real man: with a good drill point and first-rate equipment."

We usually think of tools as tangible, physical, visible, touchable – in short as things. And in most cases they are. But there is one tool that is intangible, non-physical, invisible, untouchable, and yet of inestimable value to the serious safecracker. That tool is his *network* – the circle of friends, acquaintances, and fellow safemen that can be called upon for technical support.

It is commonly thought that my personal library of photos and information is so large and exhaustive that I am never left wanting for a drill point. Oh, how I wish it were so. But it ain't.

My library of photos and opening information is, as far as I know, the largest on the planet. But it didn't happen solely as a result of my own efforts, and it is *far* from complete. (In fact, it will *never* be complete.)

A substantial chunk of my library has been gathered through trades with other safemen—by *networking*. I have approximately 20,000 photo negatives, but my actual photo collection consists of more than 25,000 prints. How is it that I have more prints than negatives? Simple. Whenever I have a roll of film developed, I get double prints. I take the extra prints and trade them away to other safemen for extra sets of photos they have taken. Everyone wins this way. As a result, about 20 percent of the photos in my collection have been taken by other safemen. I urge you to do the same. The next time you go to a meeting or convention, take a couple extra sets of prints of a safe or two with you. Meet the guys, get names and addresses, and horse trade till you drop. In other words, *network*, my friends. The benefits, in both information and friendship, will far outweigh the costs.



1. The Mosler jeweler's chest.

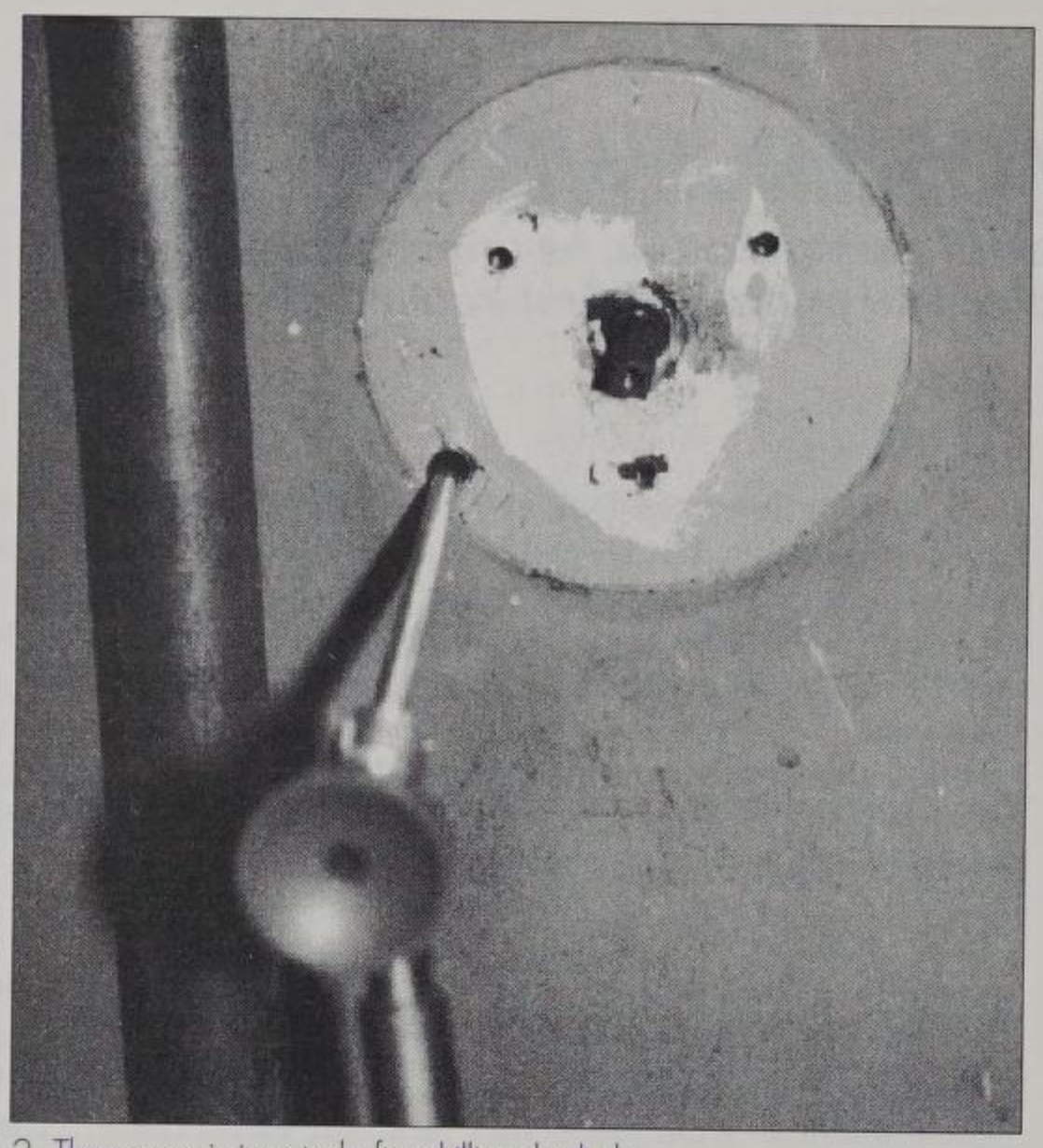
This month we will look at some photos that came in via my own network. The respondent is Phil Shearer. The safe is an antique from the 19th century, a very large Mosler jeweler's chest. (*See photograph 1.*) Although Phil is a superb manipulator (he won the World Manipulation Championship two years in a row), he is a busy man. So rather than mess around tidily-winking with manipulation or any other such sissified hobby, he approached the job like any real man would: with a good drill point and first-rate equipment.

Phil suspected either a Yale 025-1/2 or 029-1/2 lock. Both are indirect drive, but the offset from dial center to actual wheel center is different for each lock. The 025-1/2 is a shade under 2" from dial center to actual wheel center. The 029-1/2 is 1-1/4" from dial center to actual wheel center.

The dial was removable, and Phil wanted to keep his hole under the ring, so he deduced a drill point that would cover both locks. The drill point he used was 1-1/4" LC, 1-1/8" down. This would keep his hole under the dial ring, and would give him a good scope hole on either the 025-1/2 or the 029-1/2.

So Phil backed out the screw from the center of the dial and removed the dial and ring. He measured, marked, double-checked and triple-checked his drill point. A 1/4" He-Man Volosing Special was chucked up, and Phil went for it. After downing a Diet Coke and a Kit Kat, he broke through. Strong Arm does it again. The scope is inserted into hole (*see photograph 2*), and my, my, what a beautiful sight – the wheels.

The dial is put back onto the spindle, but the dial ring is left off. (*See photograph 3.*) Phil placed his hole so that he would be able to scope the hole while using the original



2. The scope is inserted after drilling the hole.

dial to record and transfer the wheel gates. Clever and convenient. The relation of the wheels to the hole tells Phil that this lock is an 025-1/2. He takes his wheel gate readings, transfers them over to drop in, and the safe is open.

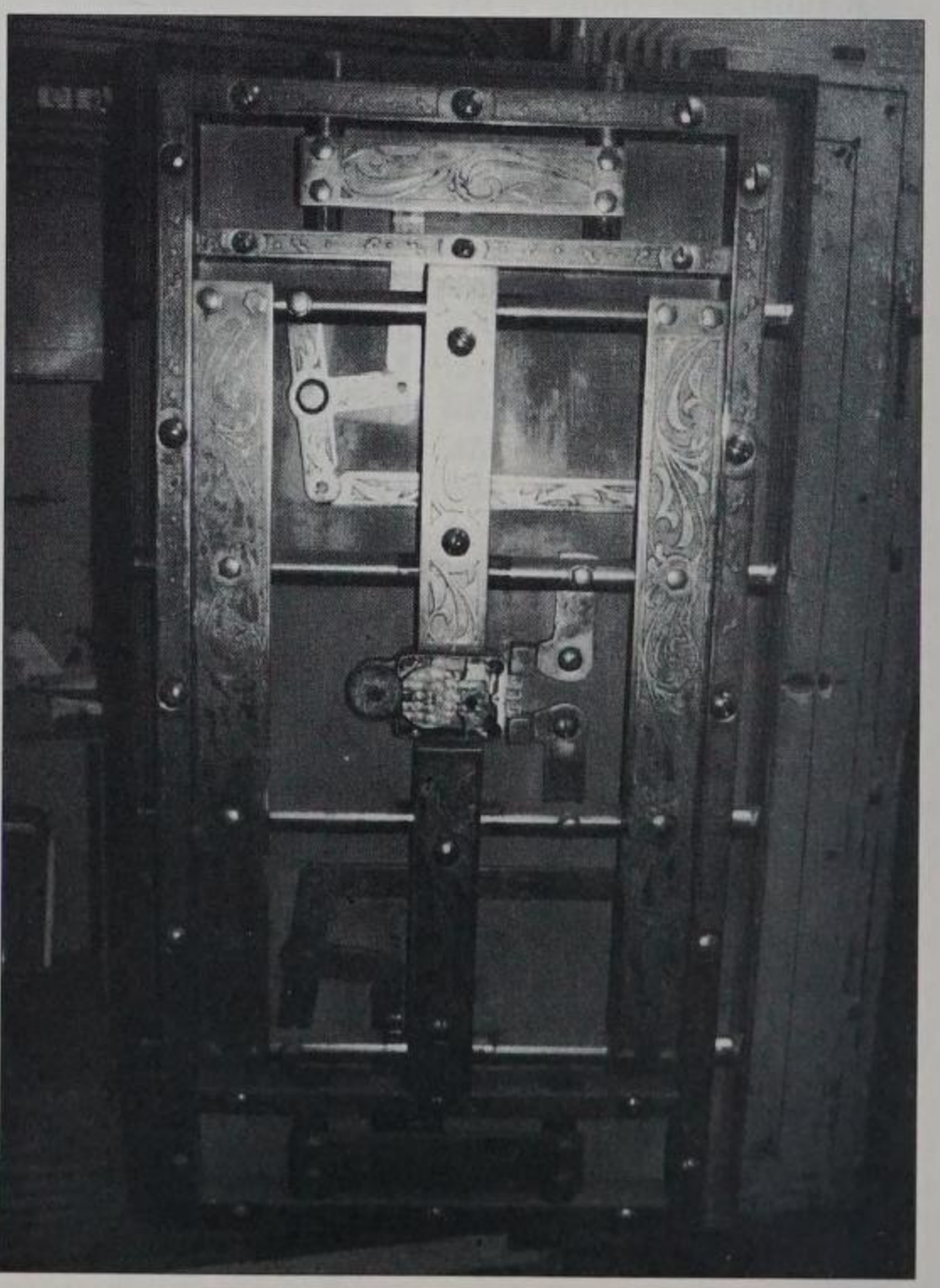
Photograph four shows the thickness of the entire door at about 4". The thickness to the lock is about 2".

Photograph five shows the inside of the door with locking bolts extended and combination lock locked. This is a 4-way boltwork, with four locking bolts on the both the hinge and opening sides, and two locking bolts top and bottom. That makes a total of 10 locking bolts!

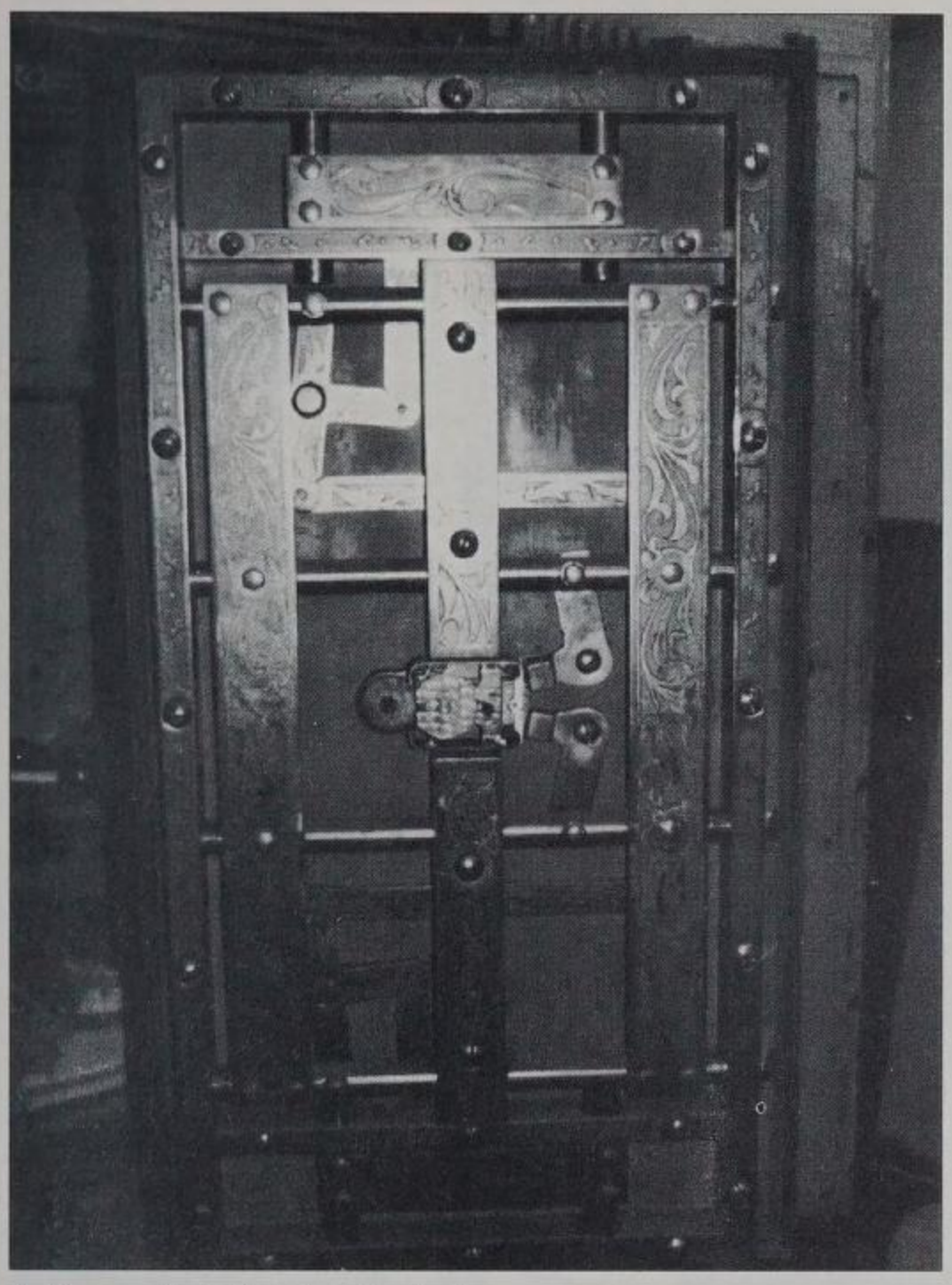
3. The dial is put on with the dial ring off.

4. The door is about 4" thick.

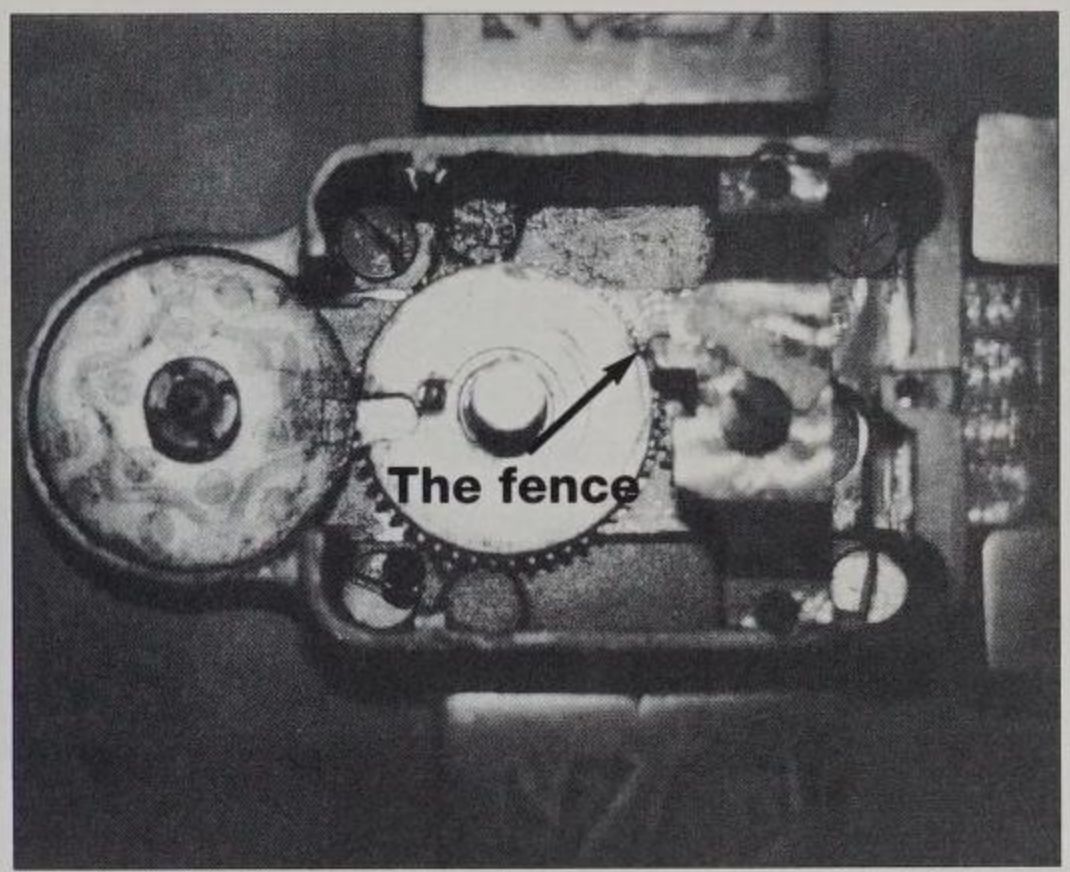
In photograph six, the combination lock has been opened and the boltwork retracted. There are no external relockers in this door.



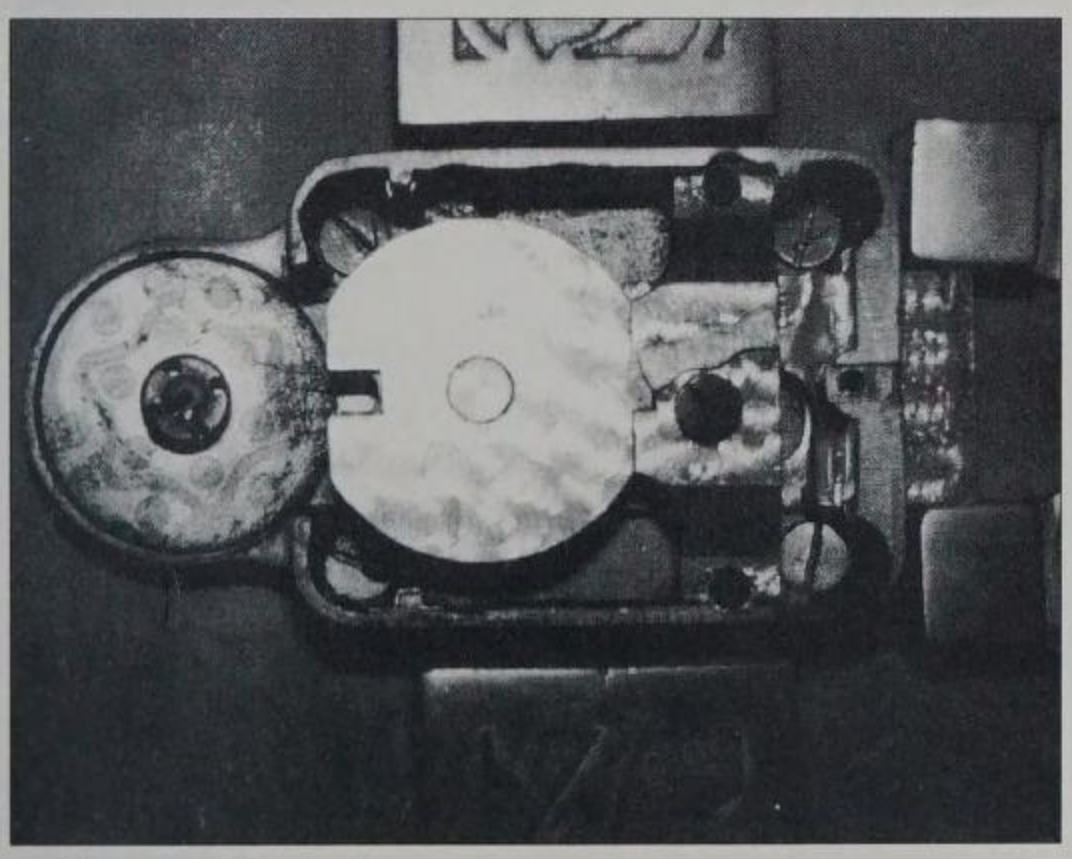
5. The inside of the door.



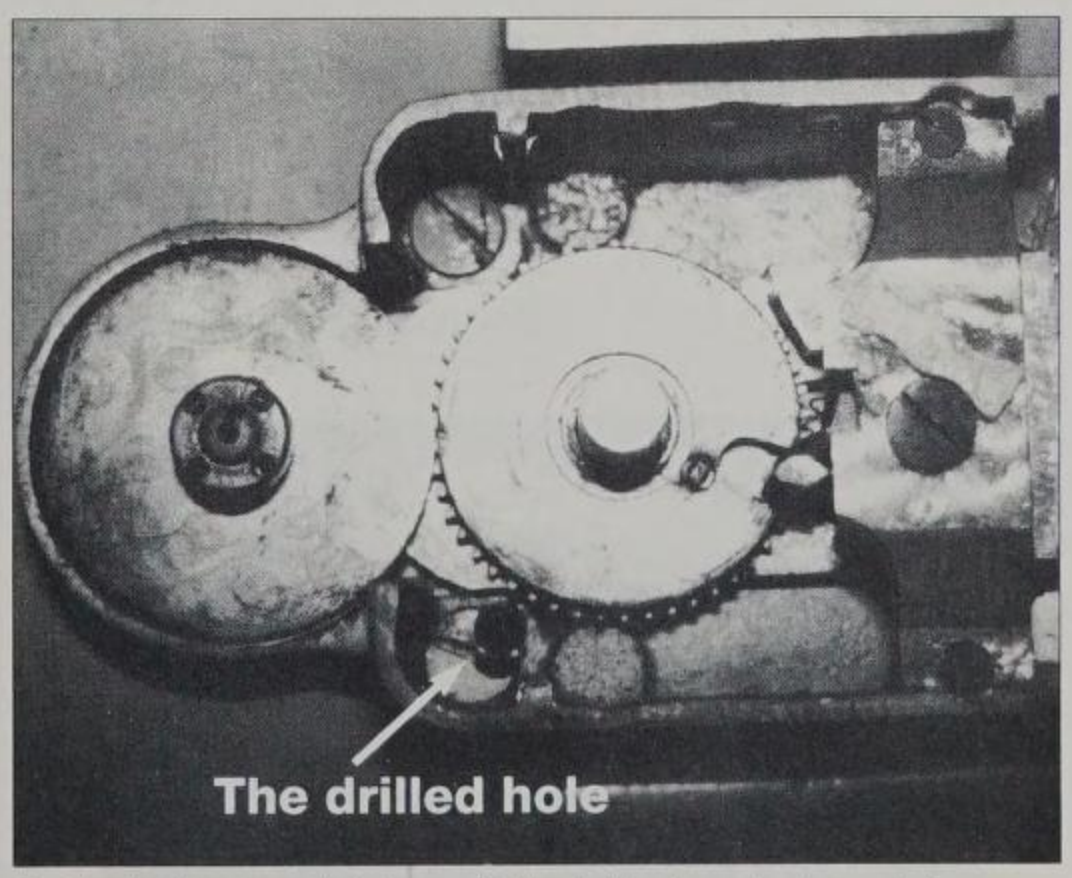
6. Door with boltworks retracted.



8. The wheel pack removed. The arrow is pointing at the fence.

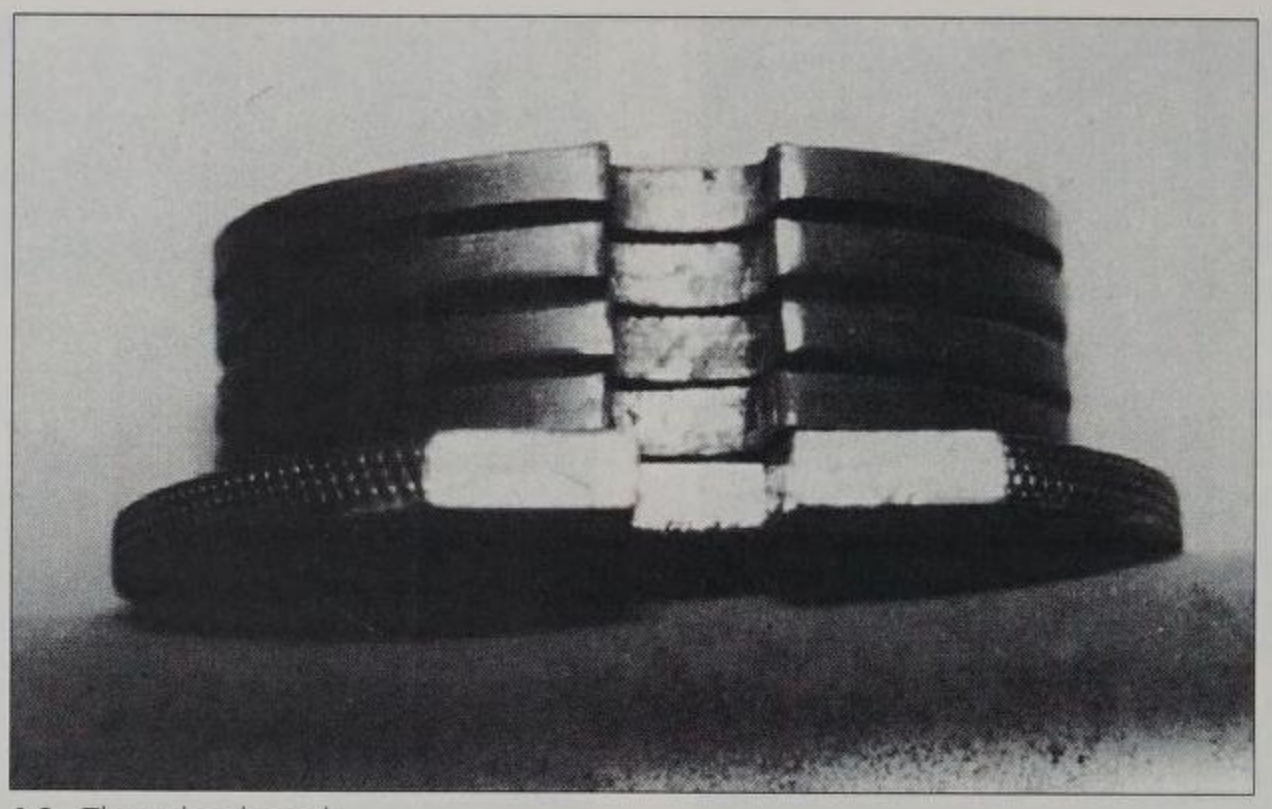


7. Close up of the lock.



9. The bolt retracted. Notice Phil's drill hole at the lower left corner.

In photograph seven we zoom in for a close-up of the lock. The back cover is removed but the wheel pack still is still screwed onto the post. The lock is in the locked position; the lockbolt is extended. We can't yet see the fence.



10. The wheel pack.

In photograph eight the wheel pack has been unscrewed. Drop in on this lock is around 79-80. (This means that if you had X-ray vision and were standing in front of the locked safe with the dial set on zero, you would see the fence located at 79 or 80.)

In photograph nine the dial has been rotated right (clockwise) to stop, retracting the lockbolt. Notice Phil's hole. He drilled away part of the mounting screw, but no harm was done. By the way, the reason Phil drilled it below rather than above the wheels was to minimize the odds of anything falling into and jamming up the wheels. Smart move.

Photograph 10 shows us the curb-mounted wheel pack, comprising four 1-7/8" diameter mesh-change wheels. In this photo, the gates are aligned with the notch in the back cover. In this position, an LOBC cover could be removed.

Well, that is about all there is to say about Phil's first-rate opening of the Mosler. Well planned and well executed, Phil made mincemeat out of a safe that would have baffled many. But as more and more of us become networkers, and increase our knowledge and skill, fewer and fewer of us remain baffled. Two cheers for progress. See ya next month.

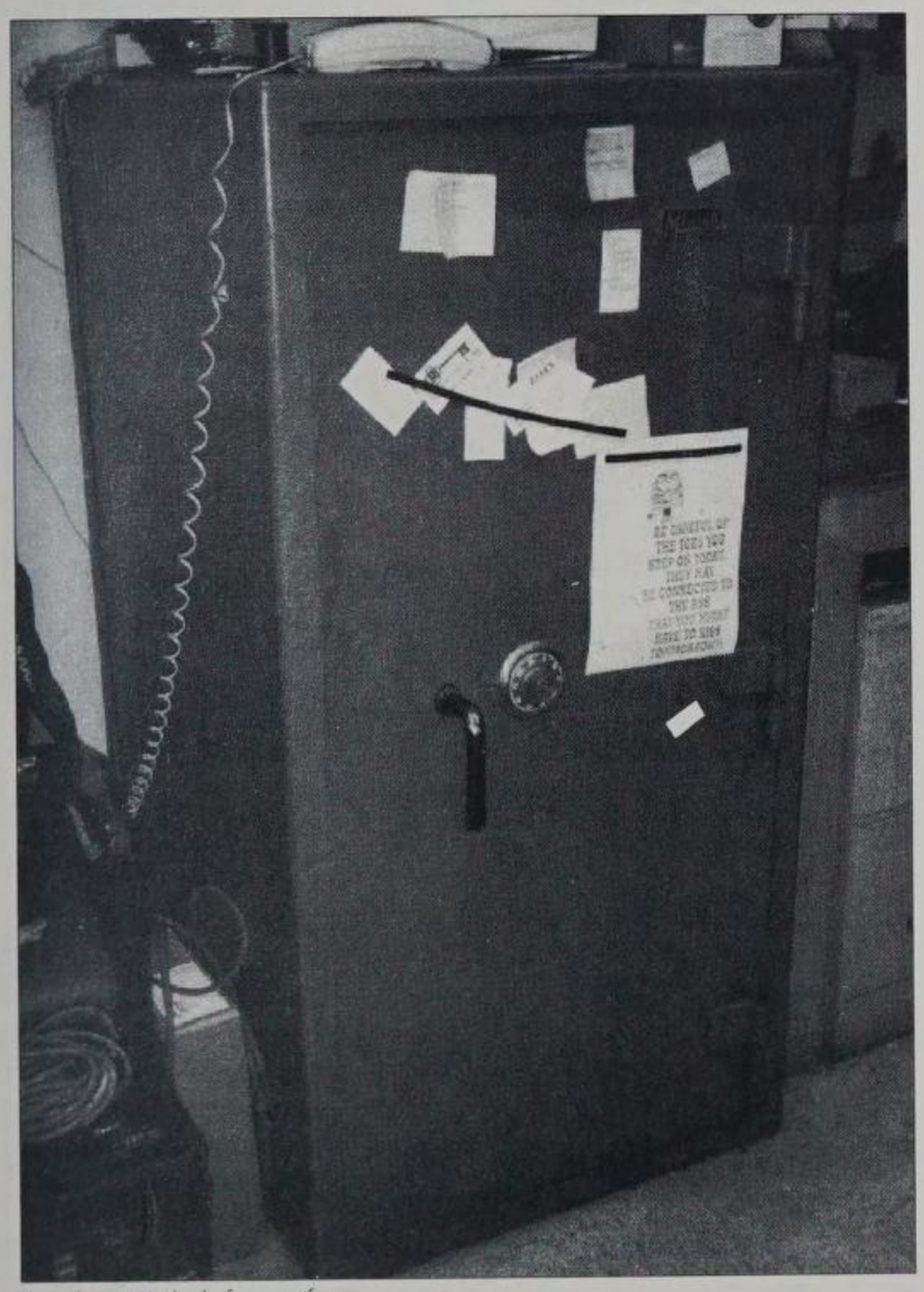
For those of you who don't know, Phil is the maker of the best commercially available picks and decoders for European keylocks. He is also one heck of a nice guy. If you are interested in obtaining any of Phil's picks or decoders, you can contact him at (617) 826-8872.

by Dave McOmie

THE FOOT-IN-MOUTH MEILINK

"The best thing to do is keep your mouth shut and let the slick, quick opening do the tooting for you."

Tooting your own horn is often a recipe for disaster. Or at least it is for me. Recently I was called out on a malfunctioning Meilink fire safe. (*See photograph 1.*) The customer had the combination and the lock was working fine, but the handle was free-spinning and would not retract the boltwork. This indicates a broken shear screw, which usually makes for a simple opening. All you do is side-drill through the body into the door and push in on a bolt or boltbar to retract the boltwork.



1. The Meilink fire safe.

The best thing to do is keep your mouth shut and let the slick, quick opening do the tooting for you. But on this one I got roped into a "Name That Tune" game that caused me to toot prematurely. The exchange between the customer and me went something like this:

"The locksmith told me that you have written lots of articles and books and that you have flown all over the United States opening safes and vaults. He said you are the very best safecracker in the whole world."

"Aw shucks, that was mighty kind of him."

"If you are the best, then how fast can you open my safe?"

Feeling obligated to impress the already-impressed customer even more, I mumbled a quick calculation. "Well, the odds favor this being a broken shear screw, which I can overcome by drilling a tiny hole through the side of the safe and pushing back the boltwork. There will be no hardplate, and I probably have the exact drill point in one of my books. Hmmm. . . I can name that tune, I mean open this safe, in 10 minutes."

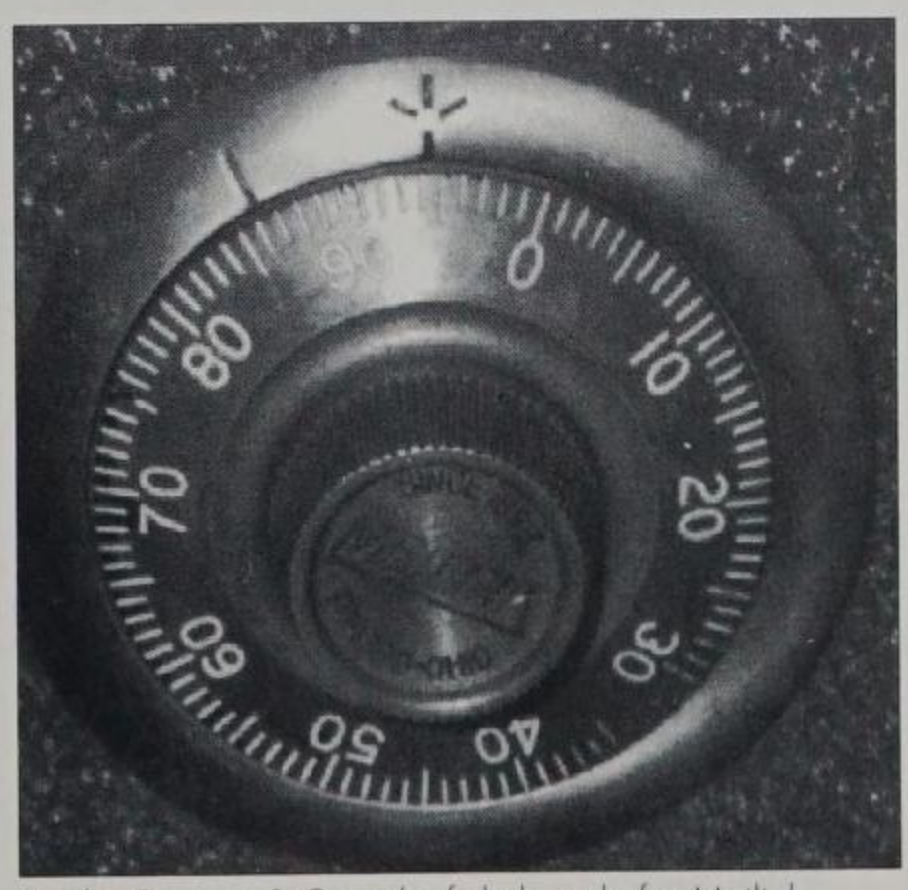
"WOW! You must be the greatest!"

"Gawrsh, I'm just doing my best."

That last gasp attempt at humility was too late. I had already committed the safeman's cardinal sin of promising a quick and easy opening. Double-dumb. Someday I hope to be mature enough to resist such a juvenile temptation. Photograph two is a close-up of the Sargent & Greenleaf dial made for Meilink. The lock is in the retracted position, with the dial stopped at about 95.

Photograph three shows how to make positive identification on this model Meilink: by the band around the edge of the body. Normally you can make ID by the handle, but the original handle on this safe had been replaced with a homemade one.

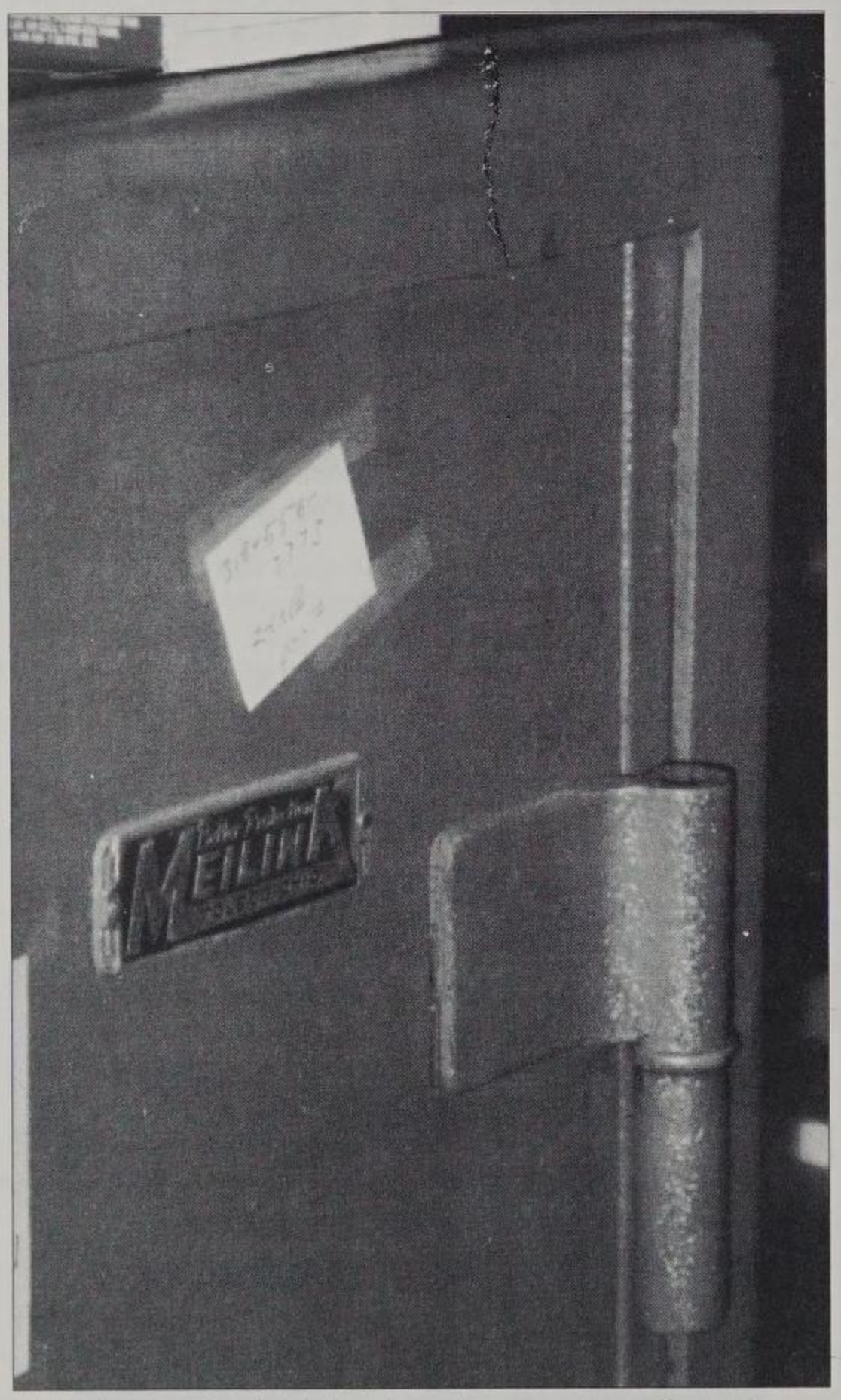
I figured that I would side-



2. The Sargent & Greenleaf dial made for Meilink.

drill through the opening side for the boltbar. With a little luck I would hit a locking bolt, but if not, then I would just push in on the boltbar and retract all the locking bolts.

So I drilled a tiny little 1/8" hole through the side, 2-3/4" back from the face of the door, and inserted a rod into the hole to push in on the boltbar. (*See photograph 4.*)



3. With an unidentifiable handle replacement, this safe can be identified by the band around the edge of the body.

But push as I might, I could not get the boltbar to budge. More then 10 minutes had now elapsed, and I was going to have to start making excuses. I hate excuses – I hate hearing them and I hate making them. But I had no choice. So I delivered my best excuse, which was really more of a bluff, cleverly disguised as a compliment for the safe:

"I see now that this is the customized model, with digitized boltwork and remote tweeter muffs. Hmmm. . . this will take just a bit longer than I had anticipated."

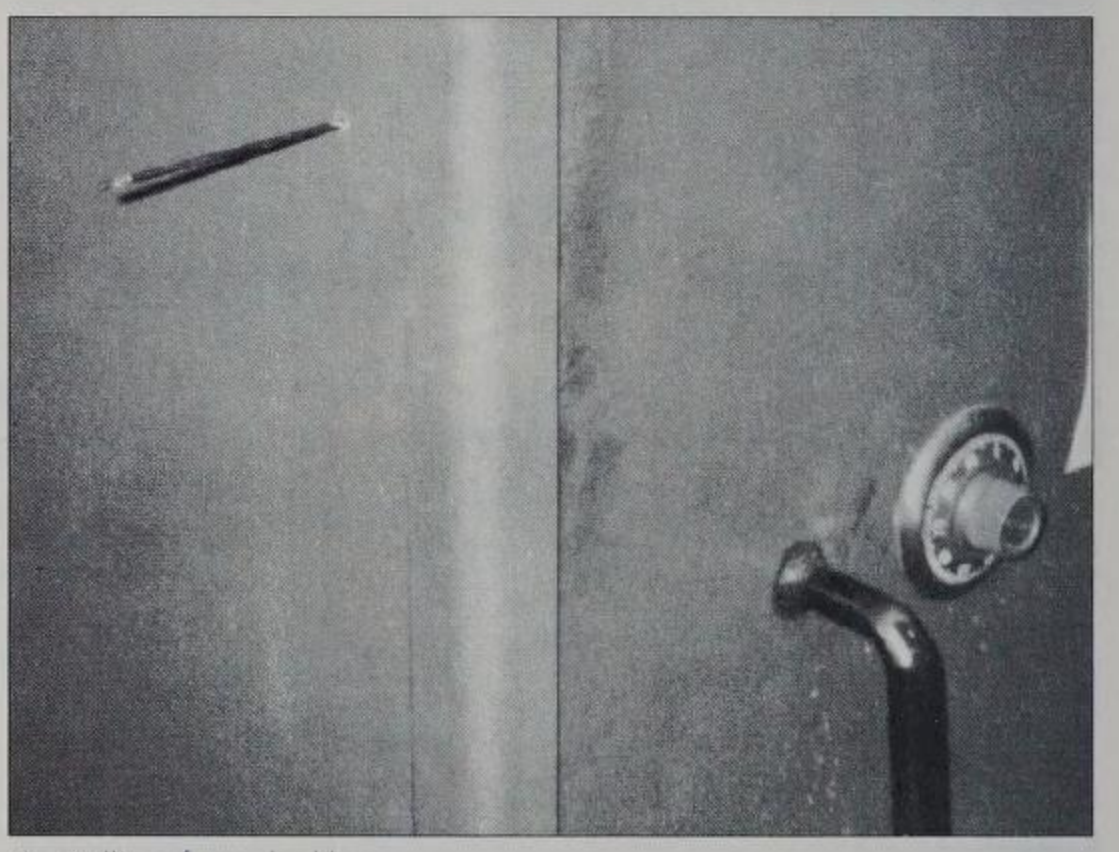
"That's okay, the bank doesn't open for another 30 minutes anyway. I'm curious, what are tweeter muffs?"

"They are contingent on the contextual analysis applied to the particular situation. In this case they are the tumbler alignment algorithms, which can explode exponentially in cases like this, which requires an exactitude to tax any technician's tolerance quotient."

"No wonder this is costing me so much."

I thought to myself that I should try this more often.

With the customer momentarily satisfied, I returned my attention to the safe. It was like there was a hidden boltwork relocker playing games with me. So I opened up the hole to 1/4" and then 3/8", and used some heavy duty punches on the boltbar. All to no avail. The boltbar was not budging. The clock was ticking, and the customer was beginning to wonder if I really was Super Safecracker after all. To tell the truth, I was beginning to wonder myself.



4. Drilling for a boltbar.

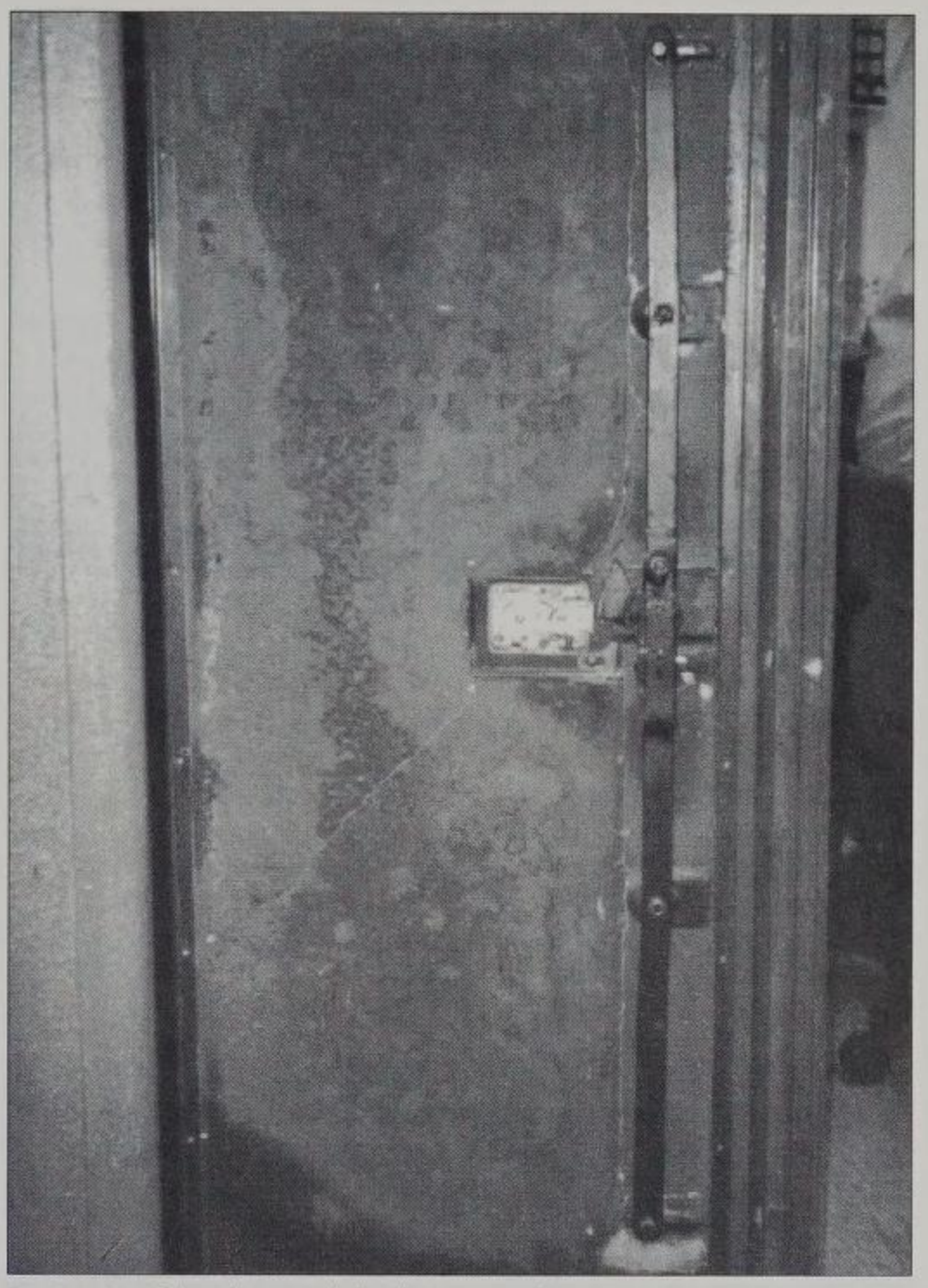
Finally, I decided to side drill right on the center locking bolt. I didn't have the exact drill point, so I scaled off a photo and side-drilled through the opening side. On one side of my hole I could see silver; I pushed in on the locking bolt and the door swung open.

To say that I was curious would be an understatement. I was *insanely* curious as to why my first hole didn't open the safe. After all, I was punching pretty hard on the boltbar and it wouldn't retract. And then I had drilled another hole and the boltwork retracted easily. Why? We'll see in a moment.

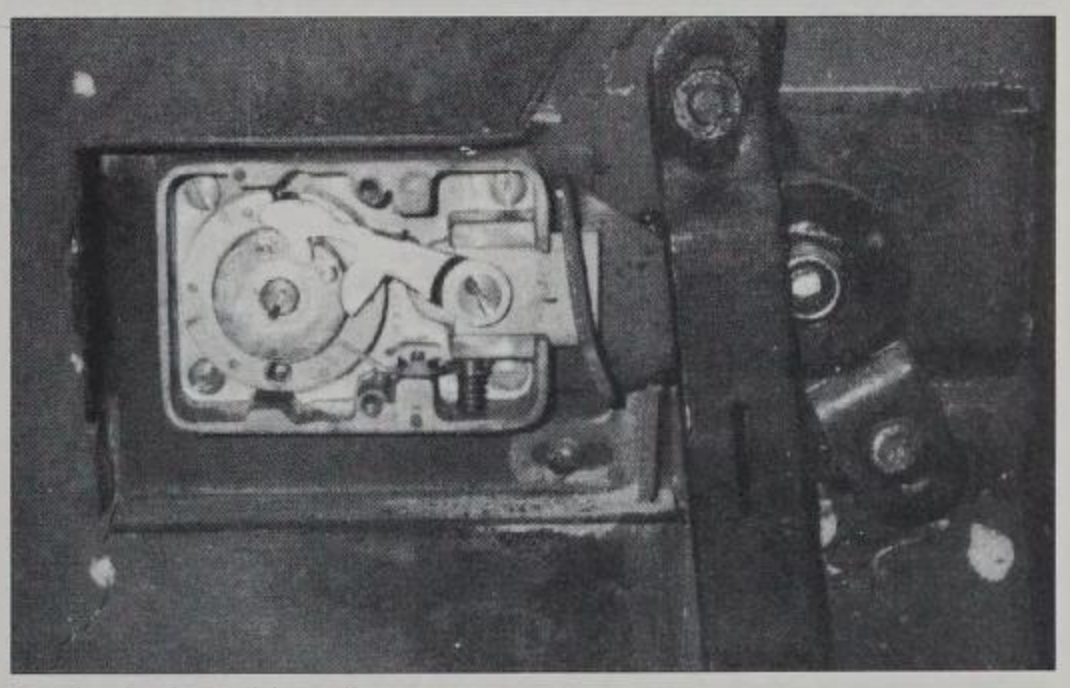
Photograph five shows the inside of the door with the locking bolts extended. Those of you who want to guess what the problem was with my first hole, pay close attention to this photo and the next.

Photograph six shows the inside of the door with the locking bolts retracted. Got it figured out? Hint: recall where the first hole was placed, and look closely at the boltbar.

5. Inside of the door with bolts extended.



6. Inside of the door with bolts retracted.



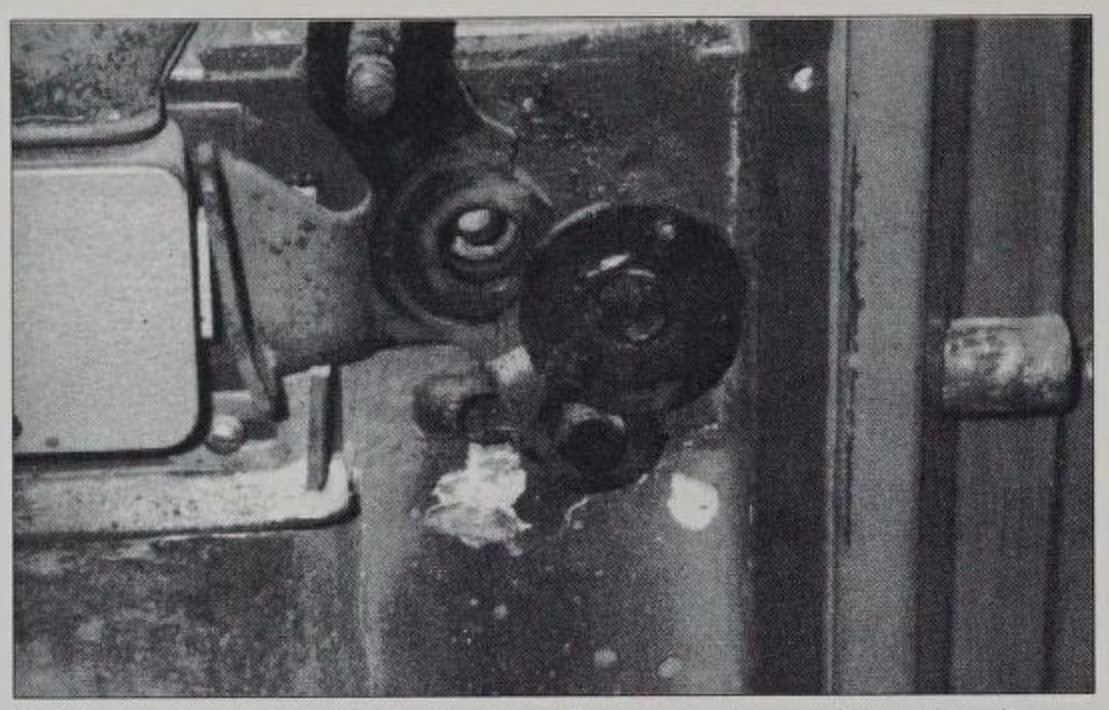
7. The lock and handle area.

Photograph seven is a close-up of the lock and handle area. The old S&G M6730 is mounted RH. Notice that the handle cam wraps around the lockbolt. This makes punching the handle cam a bad option. I did it successfully back when I didn't know enough not to try it, but it was messy. I definitely don't recommend it.

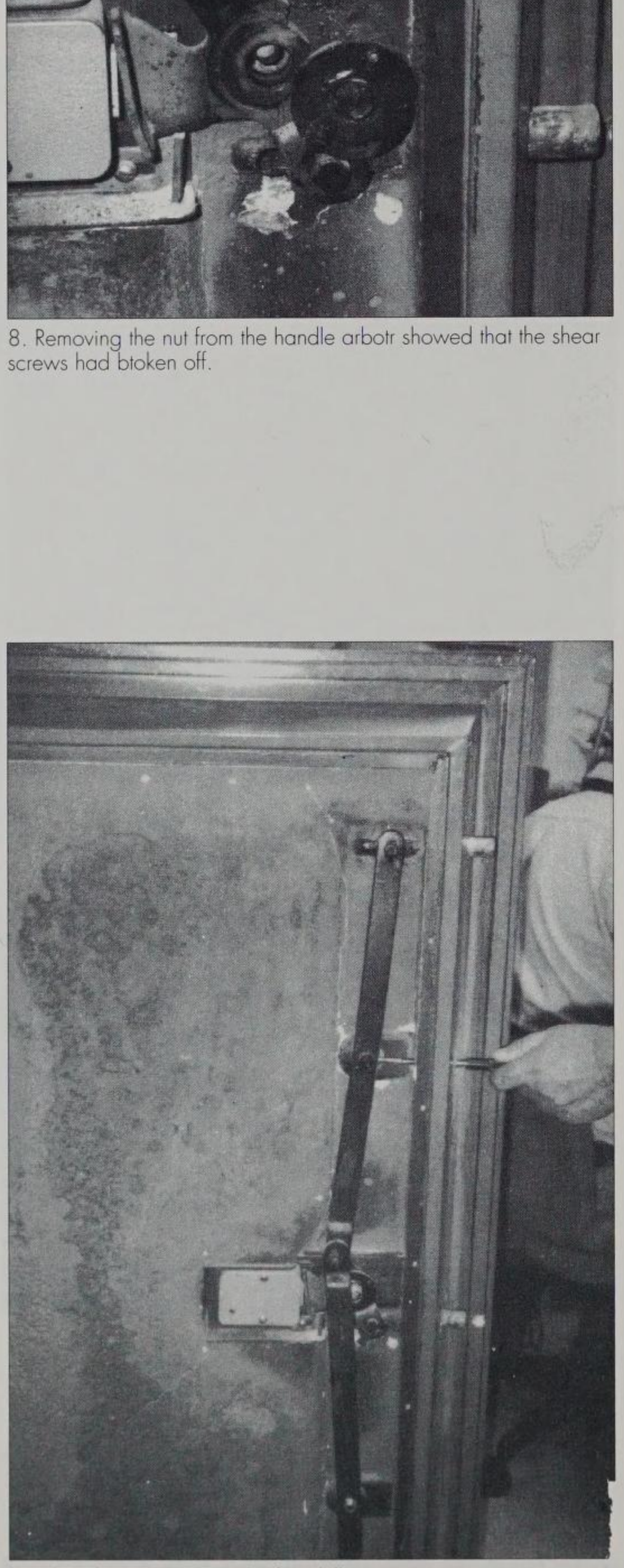
In photograph eight I have removed the nut from the handle arbor. The shear screw had indeed broken off.

Okay, let's reenact the opening and see why my first hole failed to open this safe. In photograph nine the boltwork is extended, and you can see a punch inserted into the hole that was drilled in the side of the door. You can punch all you want here, but the boltwork ain't-a-gonna budge.

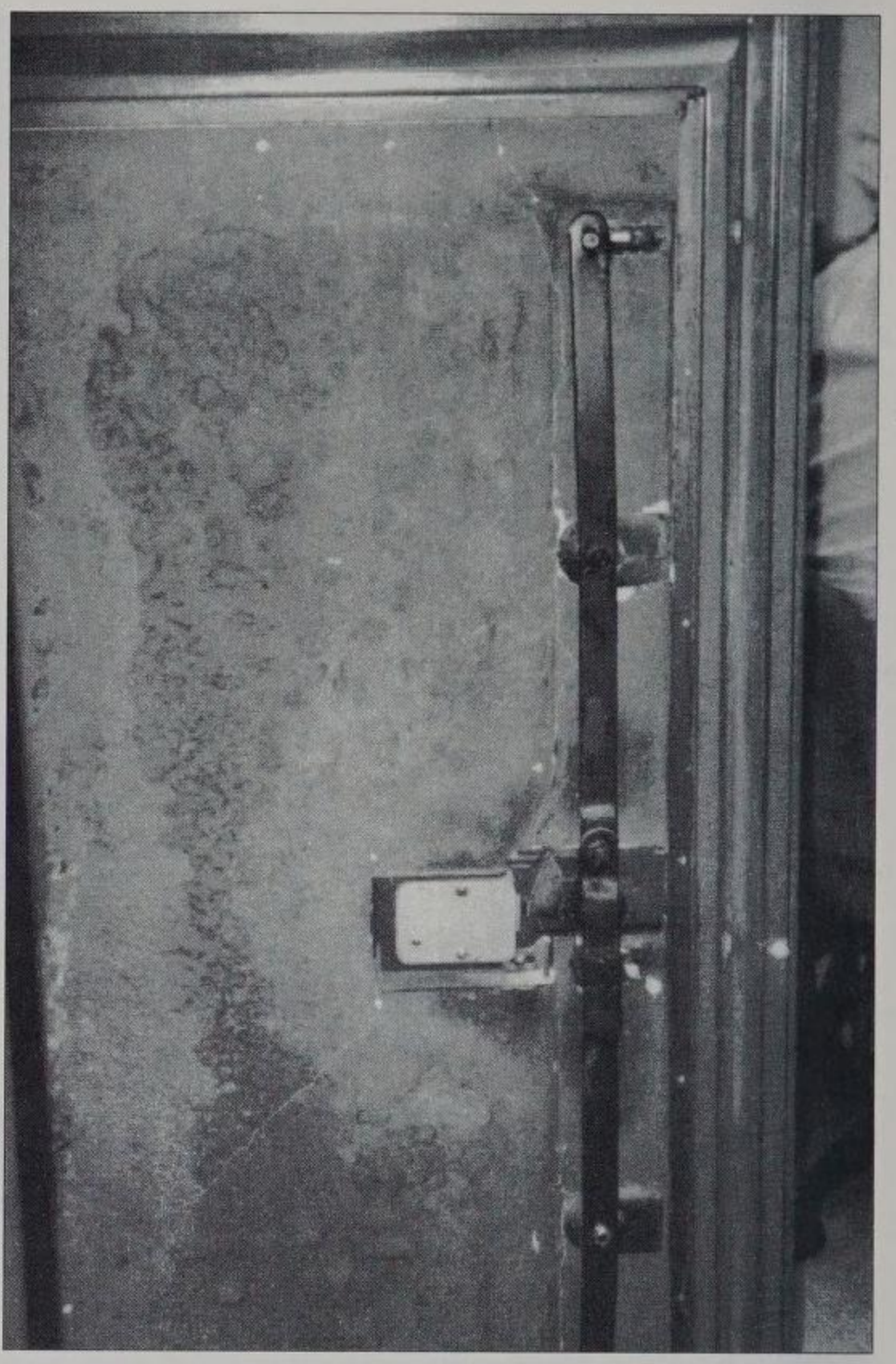
Photograph ten shows why: Unlike most other safes ever made, the upper and lower boltbars on this particular model Meilink don't just go forward and backward to extend and retract. These boltbars *pivot.* Had my hole been a few inches higher, my punching attack would have been successful. But where I was (and below that point) required that I hook the boltbar and pull it toward me to open. Actually, my hole had come out in the worst possible place: right at the pivoting point. So I would have had to hook the boltbar as low as possible and pull it toward me to open.



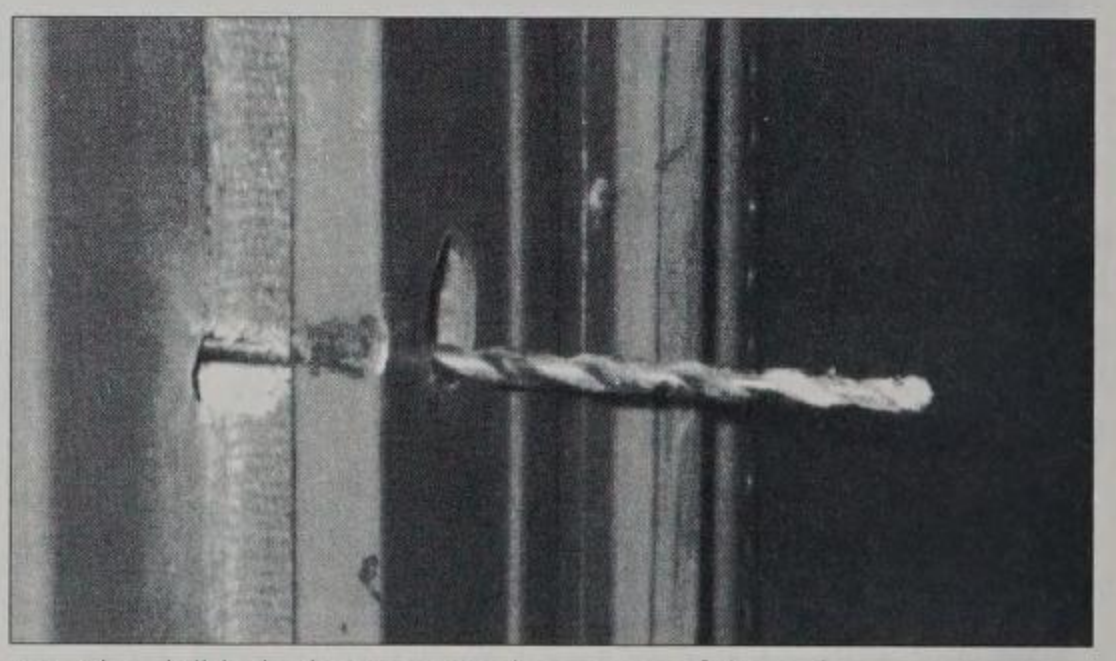
8. Removing the nut from the handle arbotr showed that the shear screws had btoken off.



9. Close but no cigar on the first drill point.



10. Unlike most other safes, these boltbars pivot, making it necessary to pull the bar at this drill point and below. Drill points above this mark require pushing the boltar.



11. The drill hole that permitted opening of the safe.

Photograph 11 shows the path of the hole that opened the safe. As you can see, it almost missed.

12. Pushing in on the center bolt opened the safe.

Photograph 12 shows what was done through the hole: it was a simple matter of pushing in on the center locking bolt to retract all the rest of the locking bolts.

So that you will never have to bumble along if you ever get one of these Meilink's with a broken shear screw, here is the right-on-the-money drill point to side-drill for the center locking bolt.

1-5/8" below dial center

2-7/8" back from the face of the door

That was a close one. The customer just about saw me sweat. But even though I went a little over the ten minutes I had so stupidly promised, the customer still thinks I am The Greatest. After all, his safe has tweeter muffs!

See you next month.

What the heck are tweeter muffs?

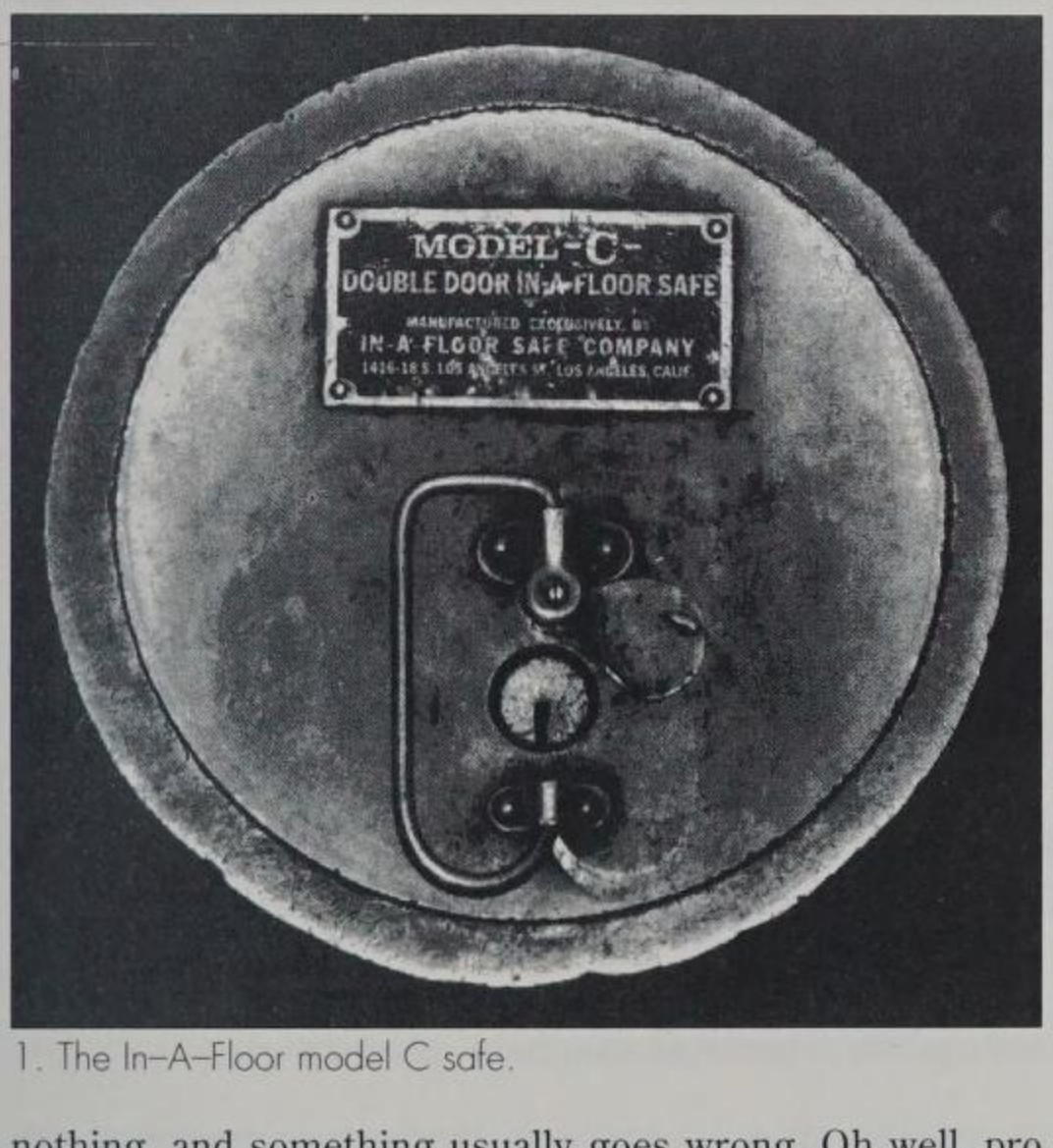
by Dave McOmie

TACKLING THE IN–A–FLOOR SAFE

"It was a relocked In–A–Floor Model C. The two little relocking bolts had fired. There is no slick way to retract them."

I avoid round door, in-the-floor safe openings like the plague. I spent too many years grating my knees across concrete floors doing thousands of floor safe openings in gas stations and food joints. And now, 22 years after my very first victory over a round door (a Gary C-50), my knees scream every time they see a floor safe.

But sometimes it can't be avoided. Recently I got roped into opening a safe for a friend of a friend of a friend. Gawd I hate these kind of jobs. You have to do them for little or

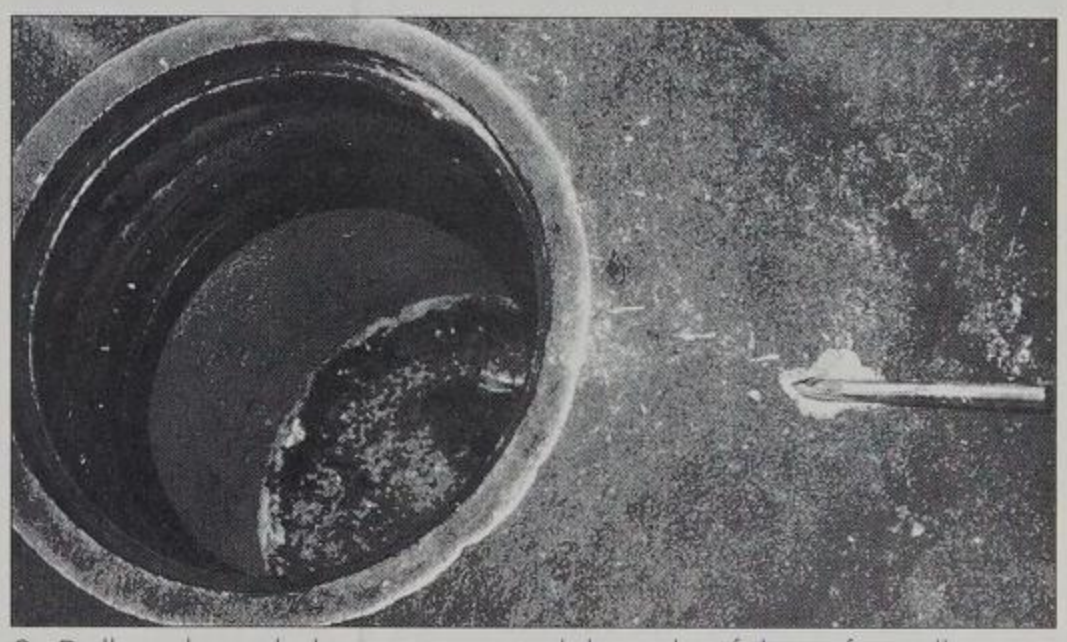


1. The In–A–Floor model C safe.

nothing, and something usually goes wrong. Oh well, pro bono work is good for the soul.

It was a relocked In-A-Floor model C. *(See photograph 1.)* The back cover had loosened up just enough for the two little relocking bolts to fire. And, as you probably know, once these relockers fire, there is no slick or magical way to retract them. (Clarification: "in-the-floor safe" is a generic term, kind of like floor safe, that denotes safes that are sunk into the ground; In-A-Floor is a particular manufacturer of in-the-floor safes.)

There are three methods of opening a relocked In-A-Floor safe. I have used all three methods many times over, and have firm convictions about them, which I shall share with you. This month we will look at methods one and two; next month we will look at method three.

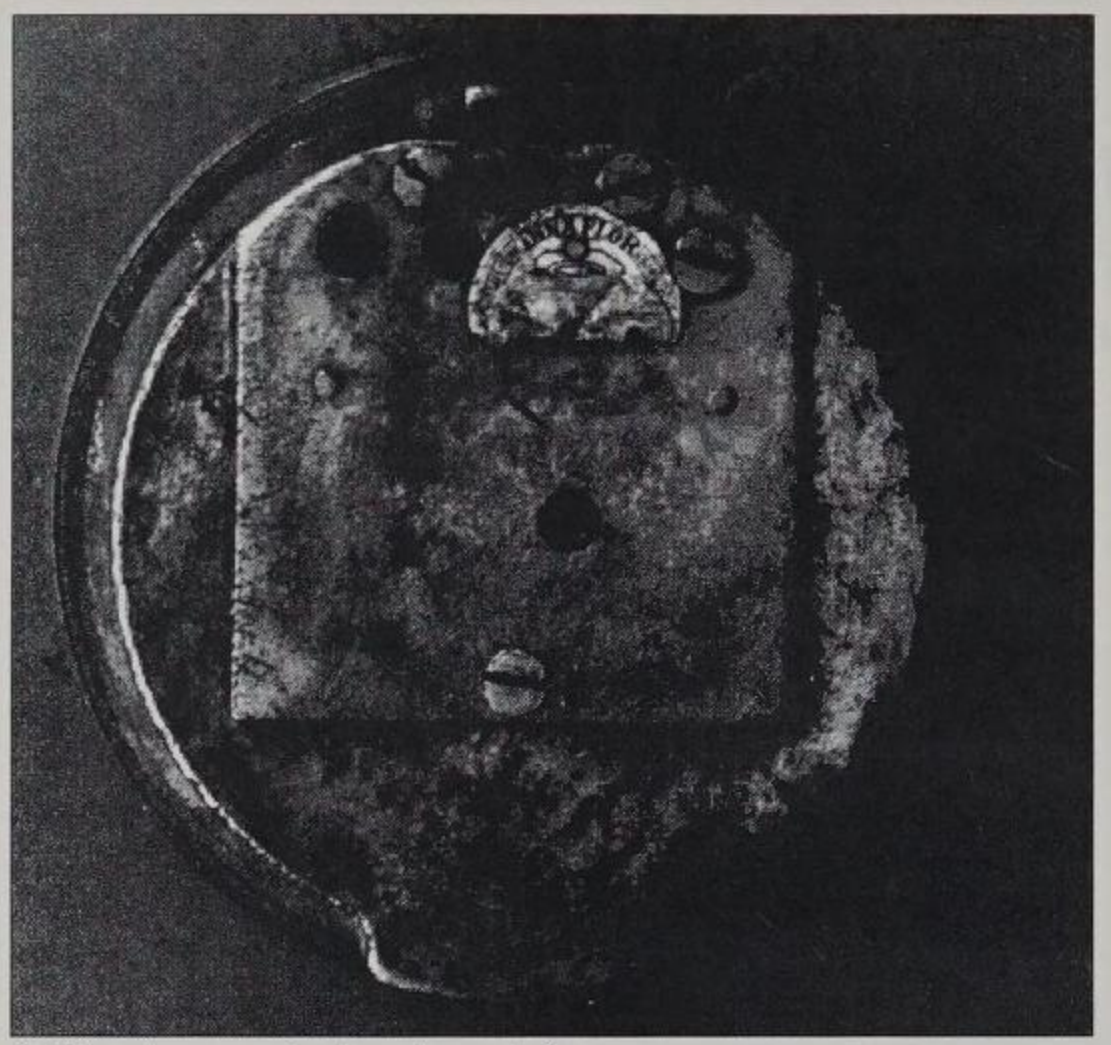


2. Drilling through the concrete and the side of the safe wall to affect an opening of this safe.

Method one is to drill through the door to probe back the relockers. This is ugly. These doors are hard (often all the way through), and the relockers can be a real pain to probe back, especially if the little crosslock pins fire. The crosslock pins are little pins that fall down behind the relockers once they fire, and prevent the relocker from being retracted. All in all, this not the preferred method.

Method two is better. It is the one I used in this case. It consists of drilling a hole through the concrete and through the safe body. *(See photograph 2.)* Once the hole is complete, you rotate the door around so a relocking bolt is lined up with the hole. Push in on the bolt and the door will lift up a little. Now for the tricky part. You have to hold the door up so the spring-loaded relocker that you pushed in doesn't fire again. Rotate the door around to line up the other relocking bolt with your hole, and push it in. The door will lift out – the safe is open.

With the relockers put back in place, and the back cover reattached, the door is back to normal and can be put back in service. *(See photograph 3.)* Service Tip: After you have tightened the back cover screws, peen some metal from the back cover into the screwdriver slots of the screws. This makes the back cover resistant to coming loose.

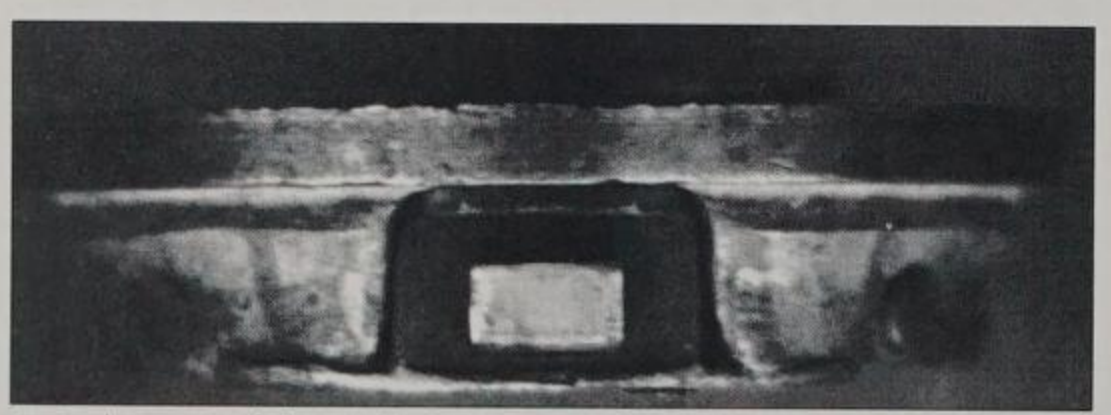


3. The door repaired and ready for use.

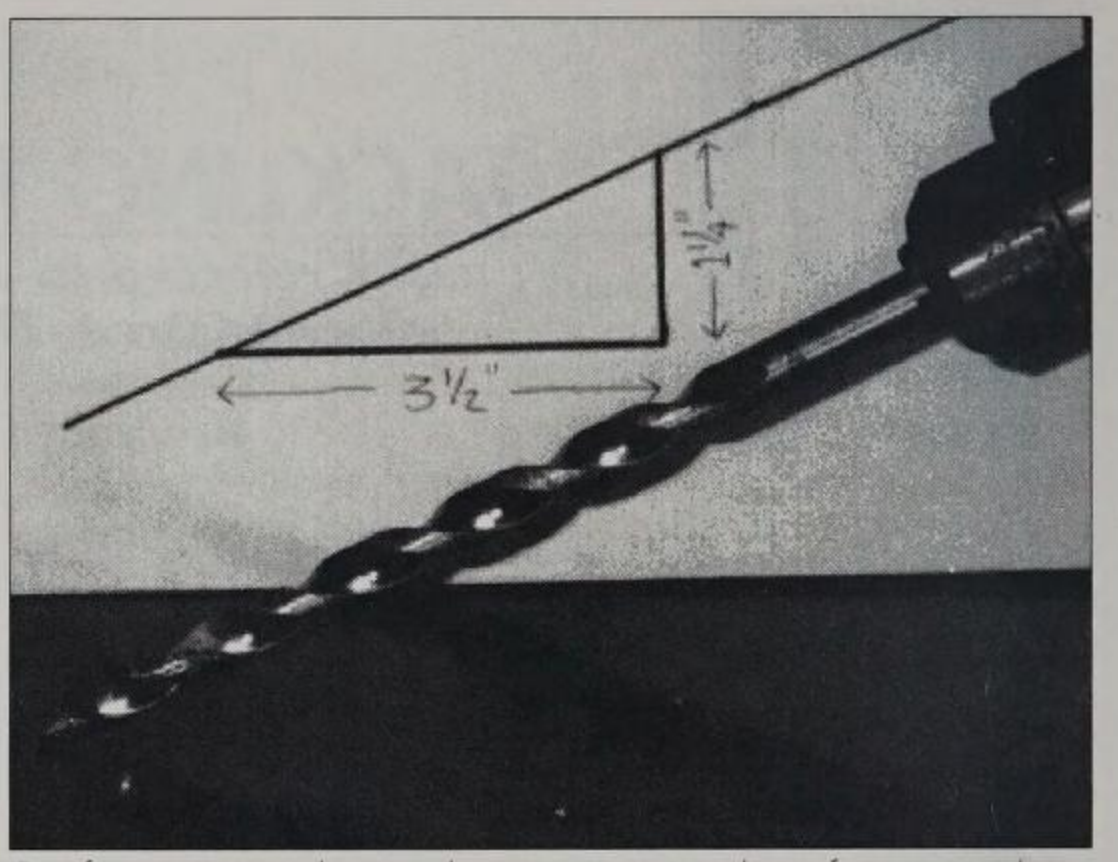
Photograph four shows us a side view of the door, exposing the lockbolt of the S&G 4163 keylock, and the two relocking bolts.

Method two is okay, but it is not risk-free. You have to do an accurate calculation of the drilling angle, so that your hole comes out at the same depth as the relockers. Otherwise you will drill an air hole.

This is best done by drawing a simple right triangle on a piece of paper that you will tape down next to the safe. The purpose of the triangle is to provide a visual guide for the right angle. To draw your triangle, you need two pieces of information: You need to know the depth from the face of the door to the relocking bolts, and you need to know how far from the edge of the door you are drilling the hole.

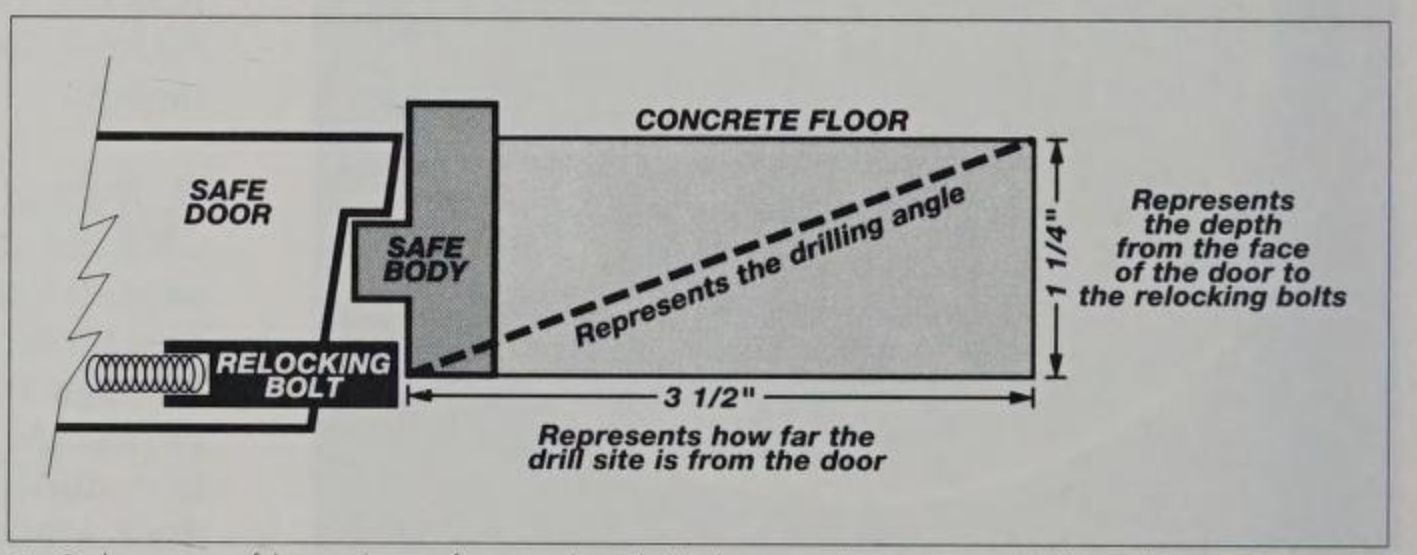


4. Side view of door showing the S & G 4163 keylock.



5. After setting up the template, set it next to the safe as a guide for your drill angle.

Let's use the safe that I drilled as an example. The relocking bolts are at a depth of about 1-1/4" from the face of the door, and I had chosen to drill the hole 3-1/2" out from the edge of the door. So I grab a piece of white paper and a pencil, and draw a line 3-1/2" long. At a right angle to this line, I draw a second line 1-1/4" long. I then connect the two lines with a third line. The third line represents the angle that needs to be followed by the drill.



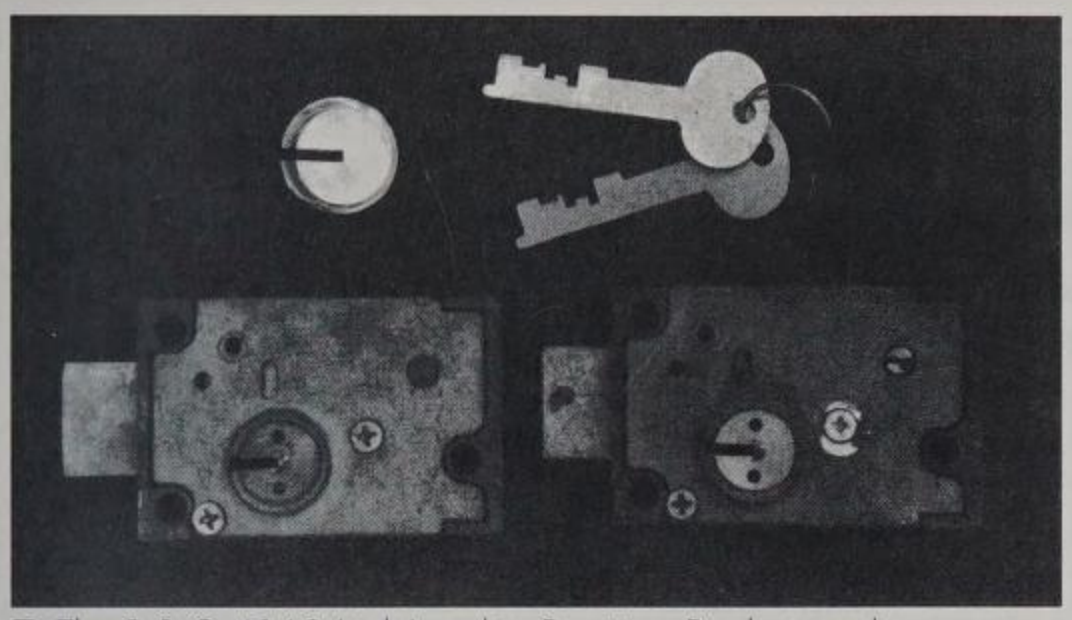
6. Side view of how the safe is to be drilled using the proper drill angle.

Next, we tape the template to the ground next to the safe, and use it to guide our drilling angle. *(See photograph 5.)*

If the concepts involved are tricky, or if I have not done a good job of explaining them, illustration six should clear up the confusion. This is a cross-section of the safe door, safe body, and concrete floor. The dotted line shows the angle that the drill will have to follow in order to hit the relocking bolt.

I know all this sounds a bit complicated, but do it once and it is as easy as putting your socks on. I promise.

Okay, let's push on. The keylocks used in In-A-Floor safes were the locks in the S&G 4160-4163 family. All were eight



7. The S & G 4163 (right) and its Precision Products replacement. The lever post is one easy method of knowing which lock you have.

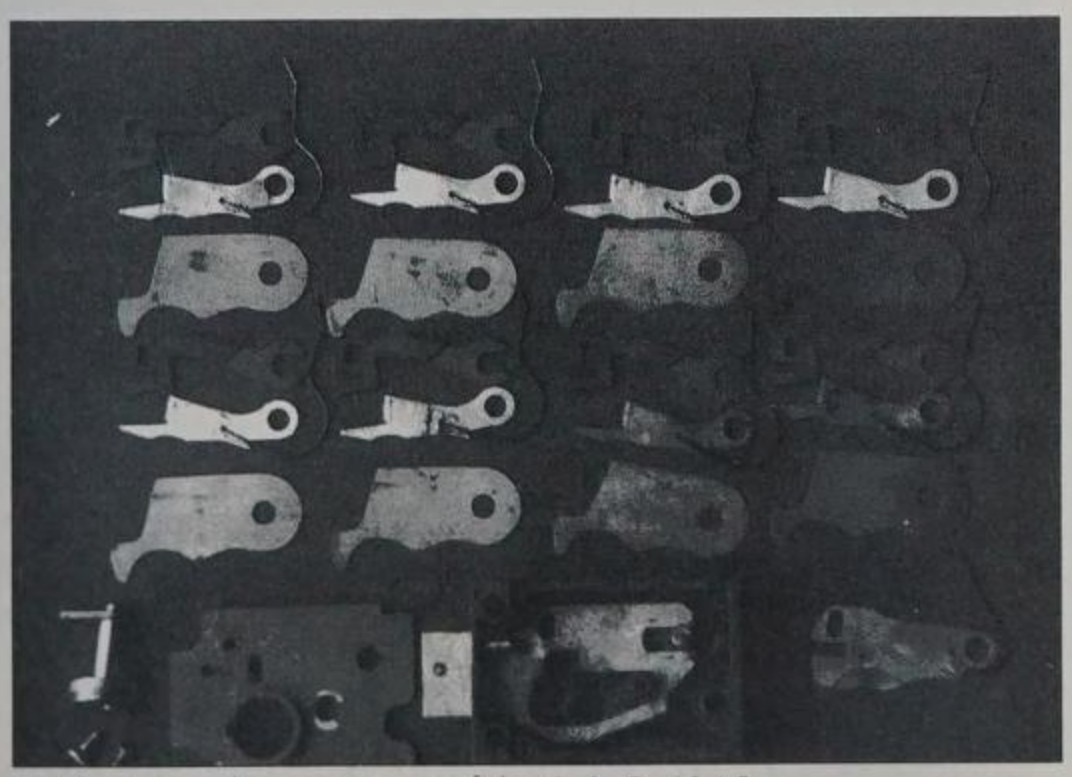
lever, key-changeable locks. Shortly after S&G discontinued the 4163, in 1985, In-A-Floor switched to a new round door using LaGard components. But there were still a zillion of the old doors out there that needed service. So Precision Products stepped in and produced a non-changeable version that could be used as a replacement. It too, went the way of the Edsel.

In photograph seven we have both locks side by side. Externally, they are very similar in appearance. Which is which? The lock on the left is the Precision Products lock; on the right is the S&G. The trick to telling them apart at a glance is by the lever posts. The lever post on the S&G is made of brass and has a slot in it. (A detent wire goes in the slot). The lever post on the Precision Products lock is made of pot metal and has no slot.

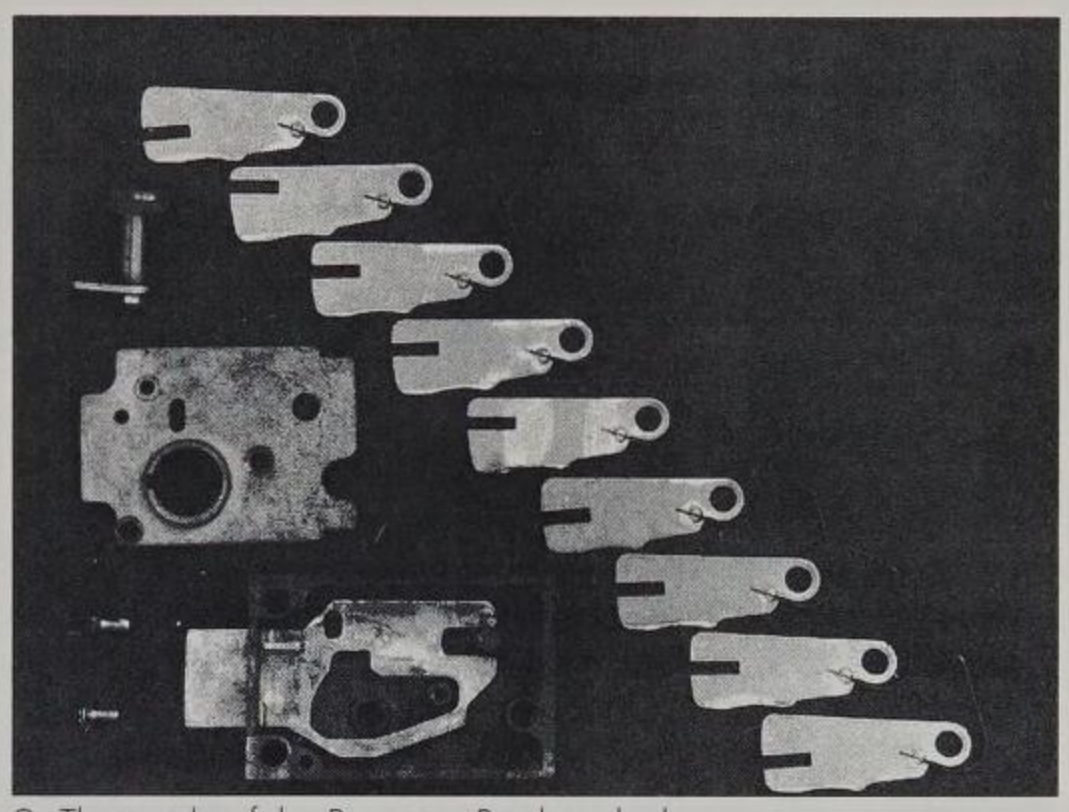
Although the locks are similar in external appearance, they are dramatically different on the inside. Photograph eight shows the inside of the S&G 4163. There are more than 30 parts in this lock.

Photograph nine show the guts of the Precision Products lock. As you can see, it has fewer than half the parts of the S&G.

I have to be honest. I rarely repair or replace these locks or doors any more. Whenever



8. The internal components of the S & G 4163.

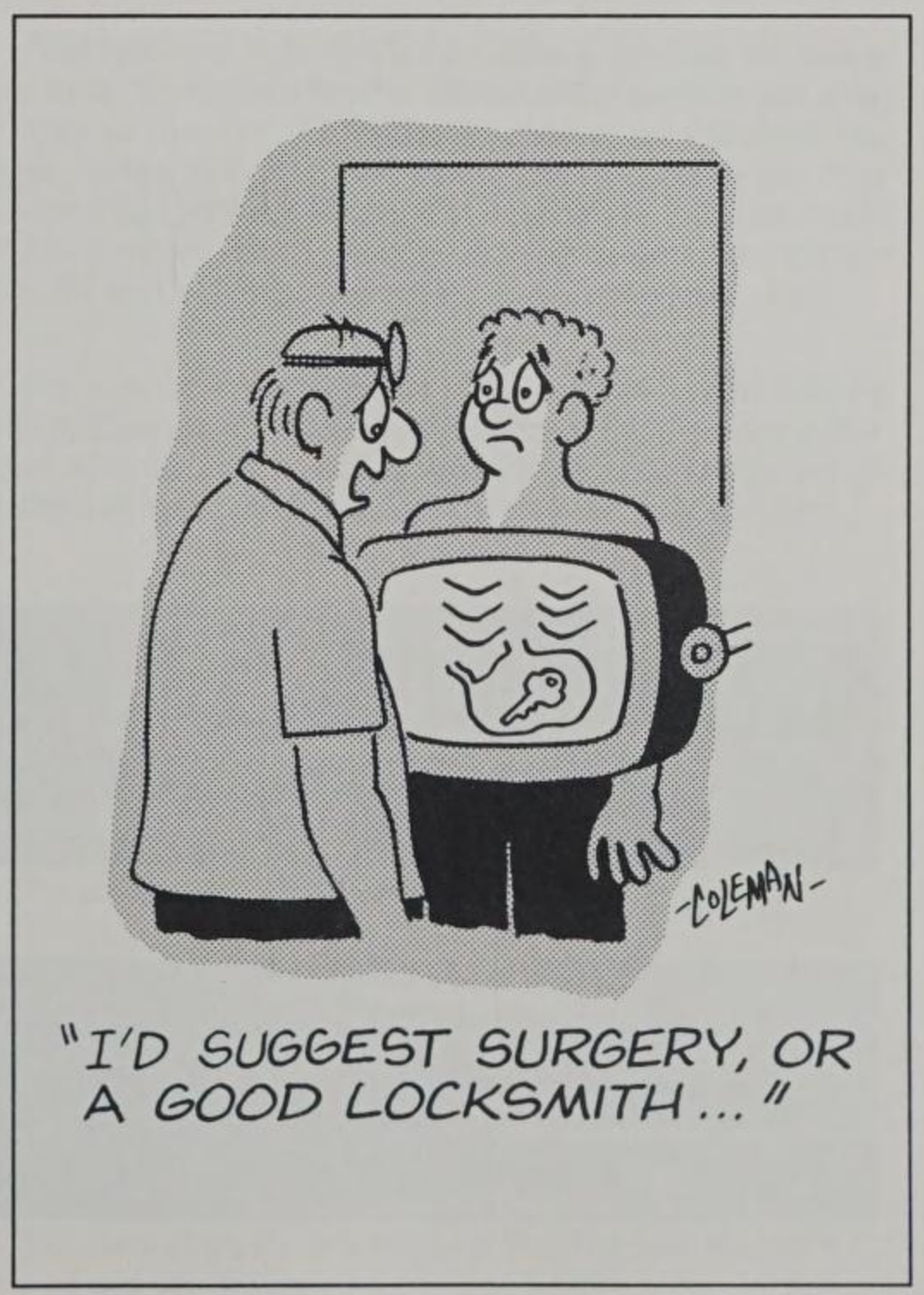


9. The inside of the Precision Products lock.

possible, I sell the customer a new replacement door from In-A-Floor. The doors are reasonably priced, you avoid a yecchy repair, and also avoid putting your warranty on a door that has a high record of failure.

The decision to repair or replace is yours, not mine. And if you would rather do a repair and need a lock, I should inform you that Harry C. Miller has a bunch of 4163's that he has rebuilt and is reselling.

Well, that about wraps up methods one and two. Method three and I will see ya next month.



by Dave McOmie

POPPIN THE LID ON IN-A-FLOOR

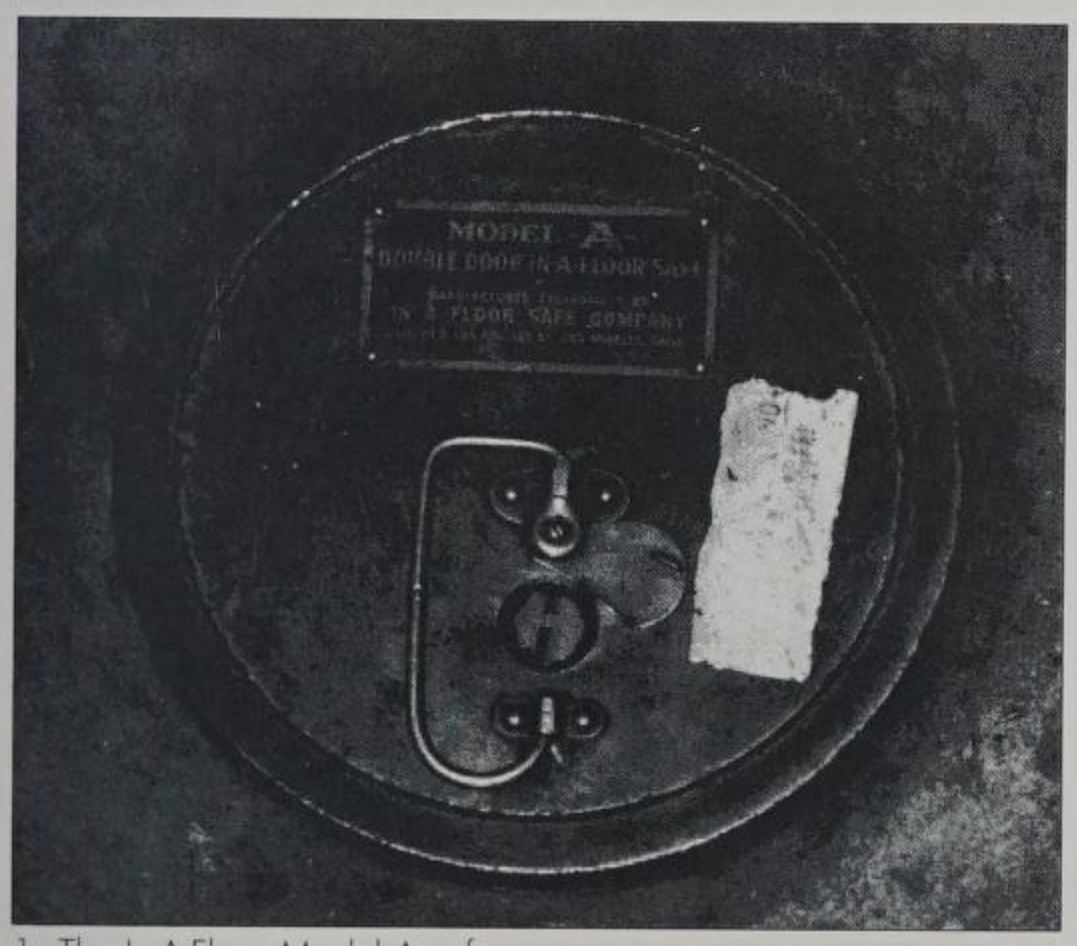
"My favorite opening method of the three we examined? Definitely pulling. The puller is quick and easy, no muss and no fuss."

Last month I covered two methods for opening an In-A-Floor safe. This month we'll cover method three.

Method three of opening a relocked In-A-Floor round door floor safe involves the use of the superb puller put out years ago and still sold by Lee Industries.

I was called out to a gas station to open another relocked In-A-Floor, this time for Atlasta Lock Company in Portland. It was going to be an OPEN ONLY, since the owner of the safe had already decided to replace the door with a new one.

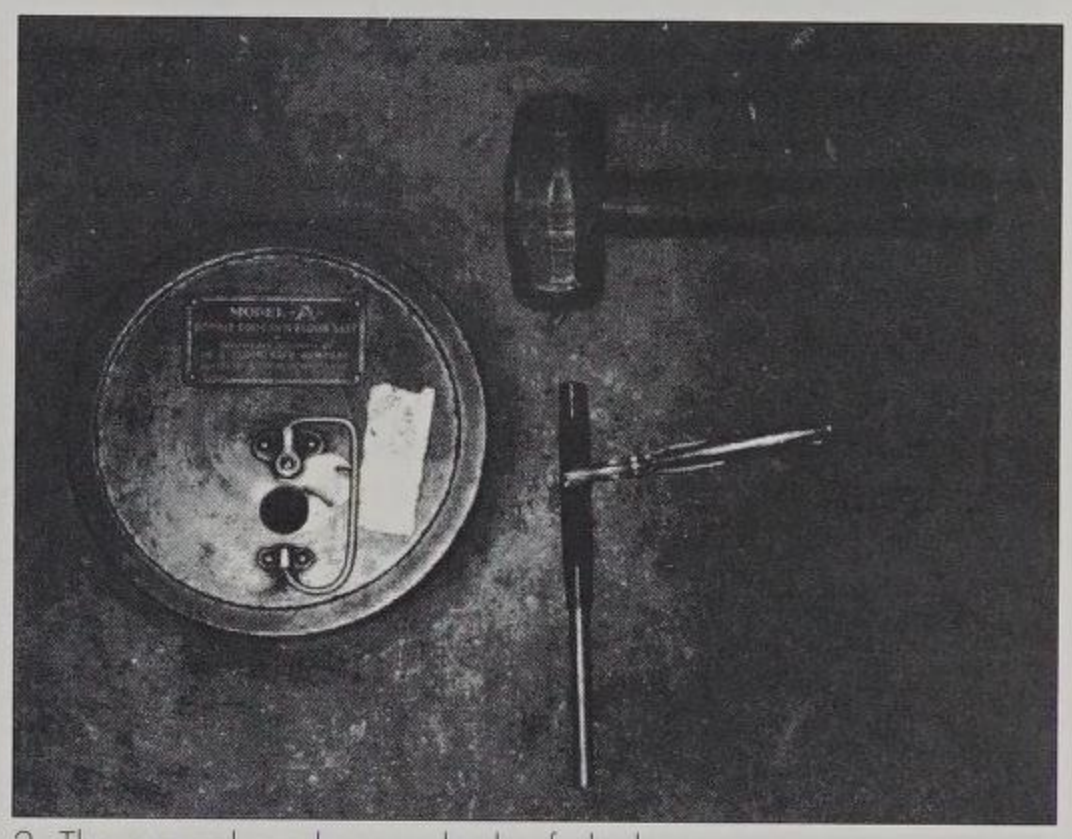
I drove out to the gas station and met the safe shown in photograph one. This is an In-A-Floor model A. Clarification: All of these old In-A-Floor key operated safes were basically the same. The model names indicate how deep each compartment is, and whether the door used a combination lock or keylock.



1. The In-A-Floor Model A safe.

I tried the customer's key. It worked perfectly – the keylock was definitely unlocking. I verified that by holding slight upward pressure on the door and rotating the key. As soon as the lockbolt of the keylock retracted, the door would jump up about 1/2" and then stop. The relockers had definitely fired.

So I took out a hammer, vice grip, and punch, and played burglar—I punched the keylock into the safe! (*See photograph 2.*) The reason for punching the keylock is to

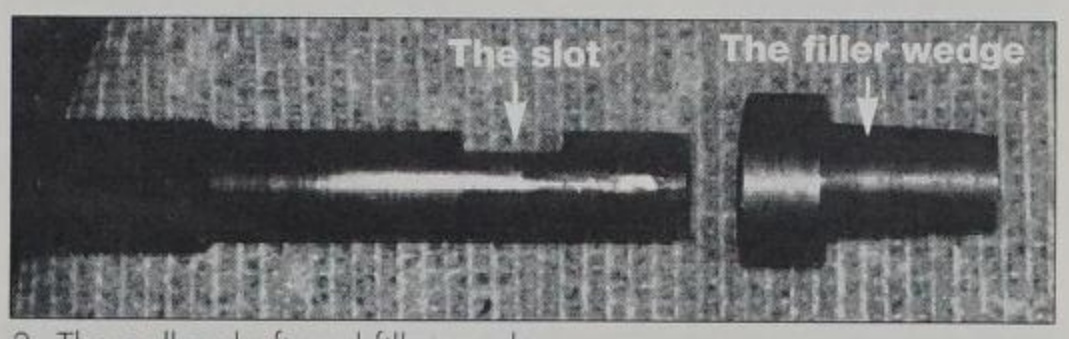


2. The arsenal, and a punched safe lock.

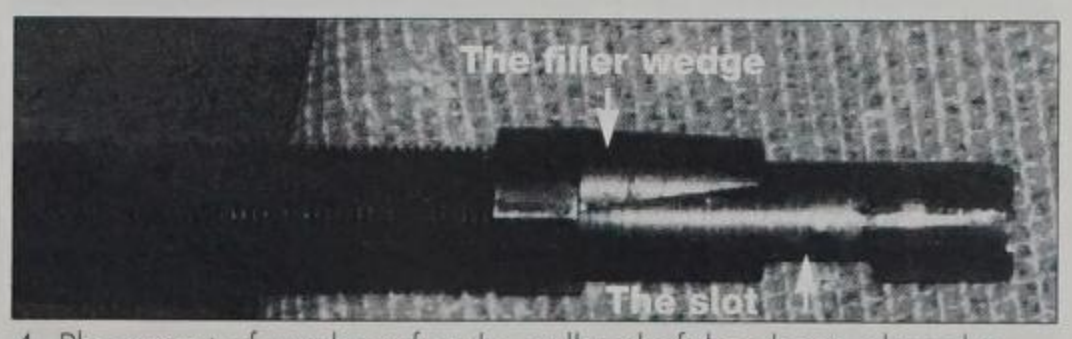
remove any and all parts from around the keyhole, because the puller will attach to the safe through the keyhole.

The next step is to attach the puller to the safe. We insert the tip of the threaded puller shaft into the keyhole and slide it over so that the slot in the tip catches on the lip of the door. Sliding the shaft over so the slot can engage the door leaves a gap between the back of the shaft and the other side of the keyhole. This is filled by sliding down a filler wedge into the gap, which prevents the puller from slipping out.

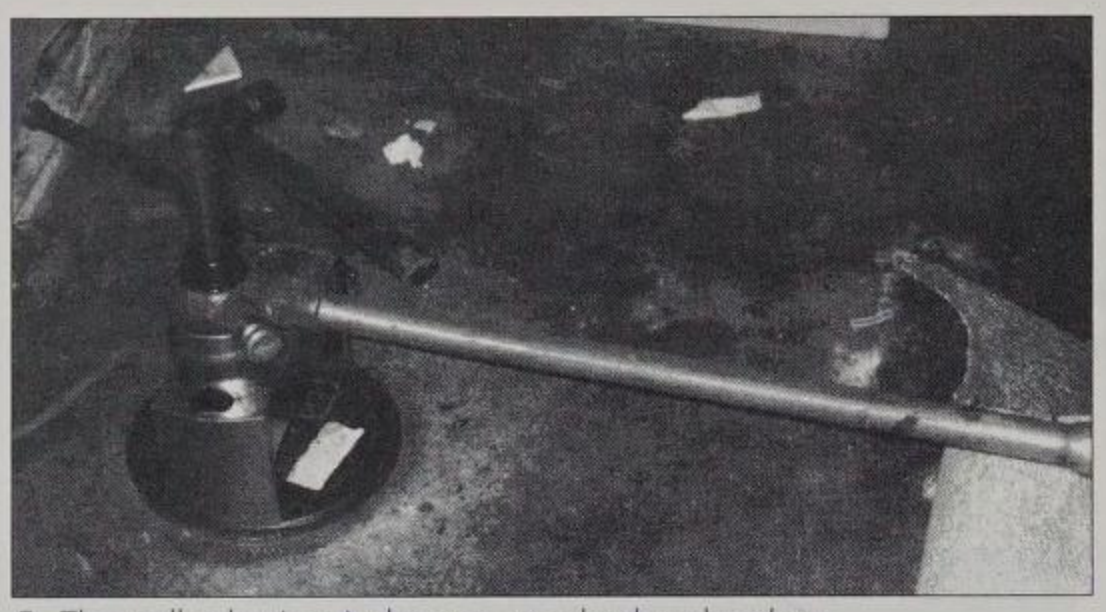
Let's review with photos what we have been talking about. Photograph three shows the tip of the threaded puller shaft with the filler wedge to the right of it. The arrow points to the slot in the shaft that will catch on the lip of the door.



3. The puller shaft and filler wedge.



4. Placement of wedge after the puller shaft has been placed in keyhole and onto door.

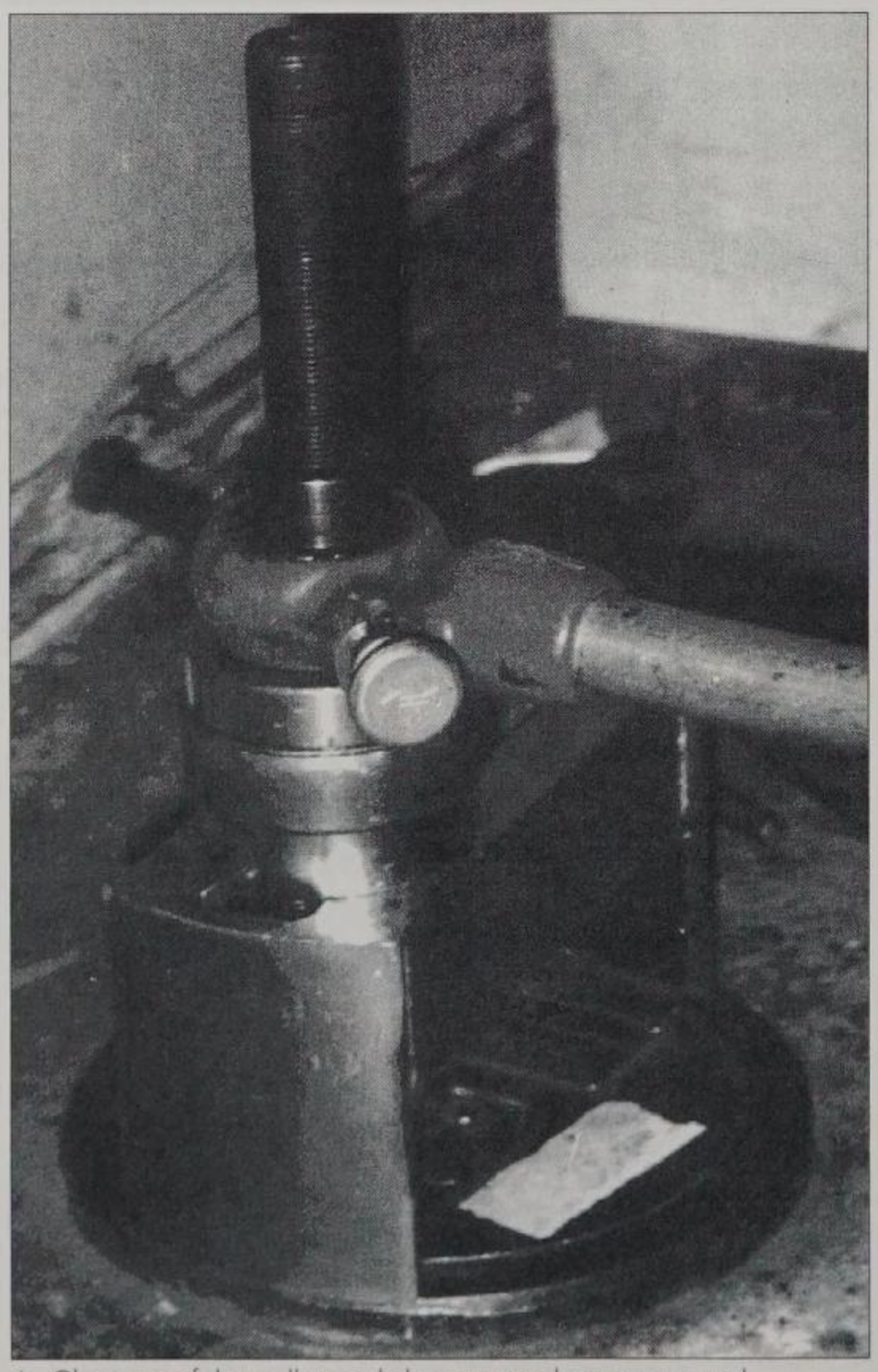


5. The puller by Lee Industries attached to the door.

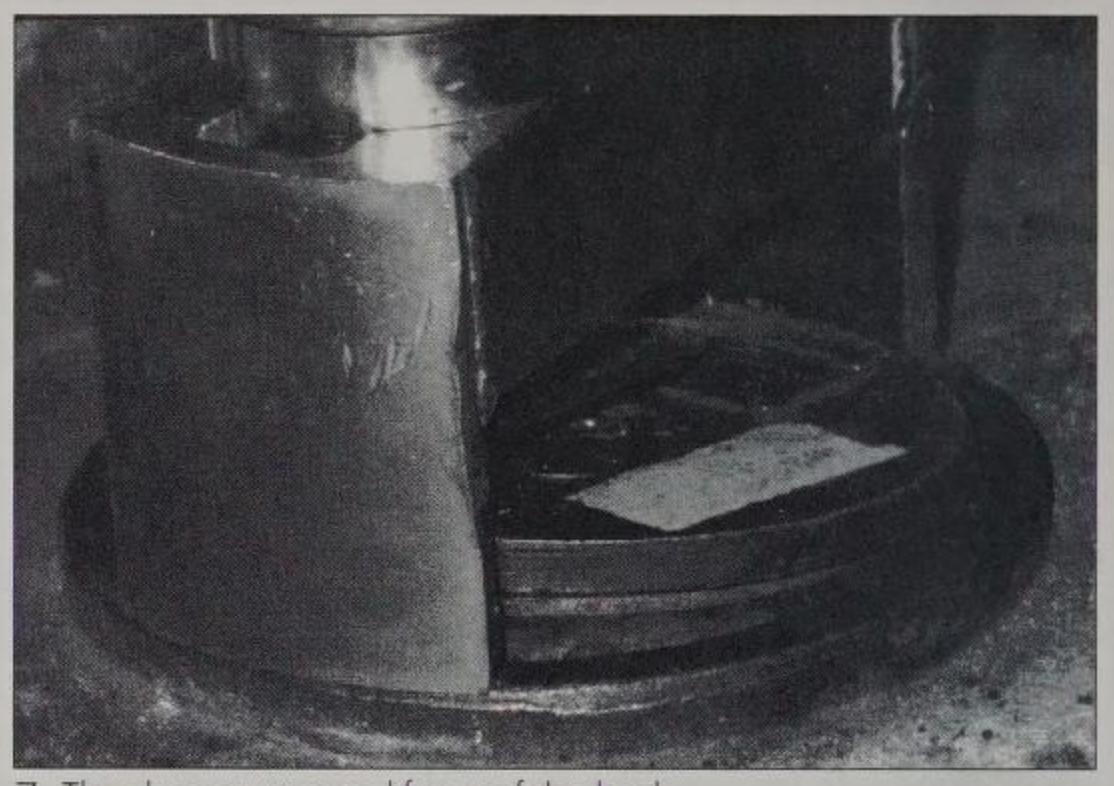
In photograph four we have slid the filler wedge onto the shaft. We can now insert the shaft into the hole in the safe lid, slide the shaft over so that the slot catches on the door lip, and slide down the filler wedge to fill the gap behind the shaft.

The completely assembled and installed puller is shown in photograph five. Now it is a simple matter of cranking on the ratchet handle enough times to pull the door right out of the ground.

Photograph six gives us a close-up of the puller and the door. The door has just started to pull out.



6. Close up of the puller and door as it is being removed.



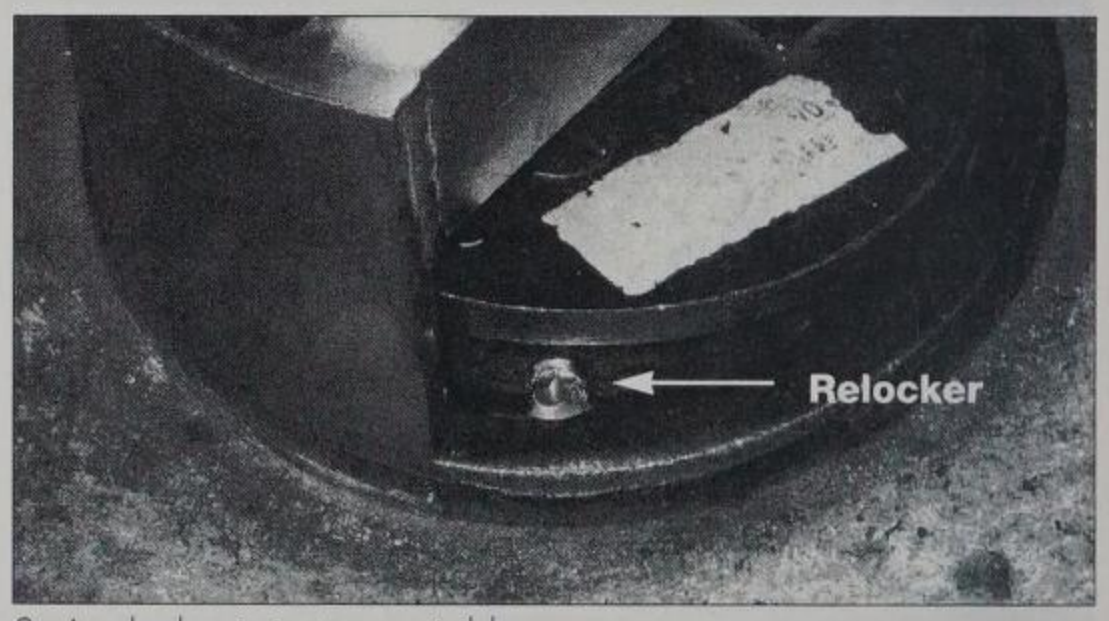
7. The door starting to lift out of the body.

In photograph seven we can see that the door is well on its way out of the hole. We can just see the tip of one of the relockers.

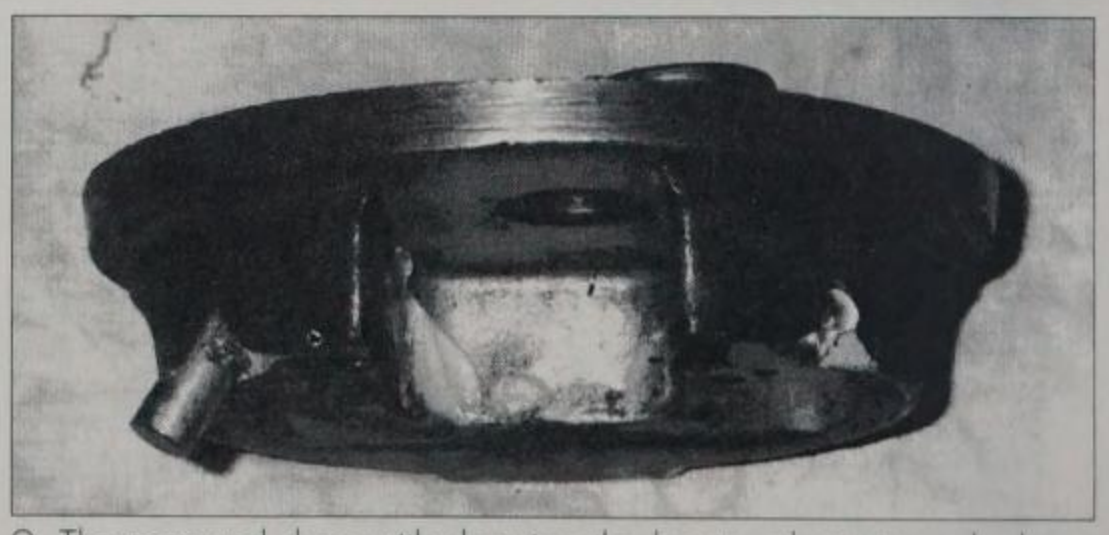
In photograph eight the door has pulled out far enough to expose one of the relockers, which has broken off.

A few more cranks on the ratchet handle and the door pops clear of the body. Photograph nine gives us a side-view of the door. As you can see, one relocker broke completely off, while the other one just bent over far enough for the door to fit through the opening in the body.

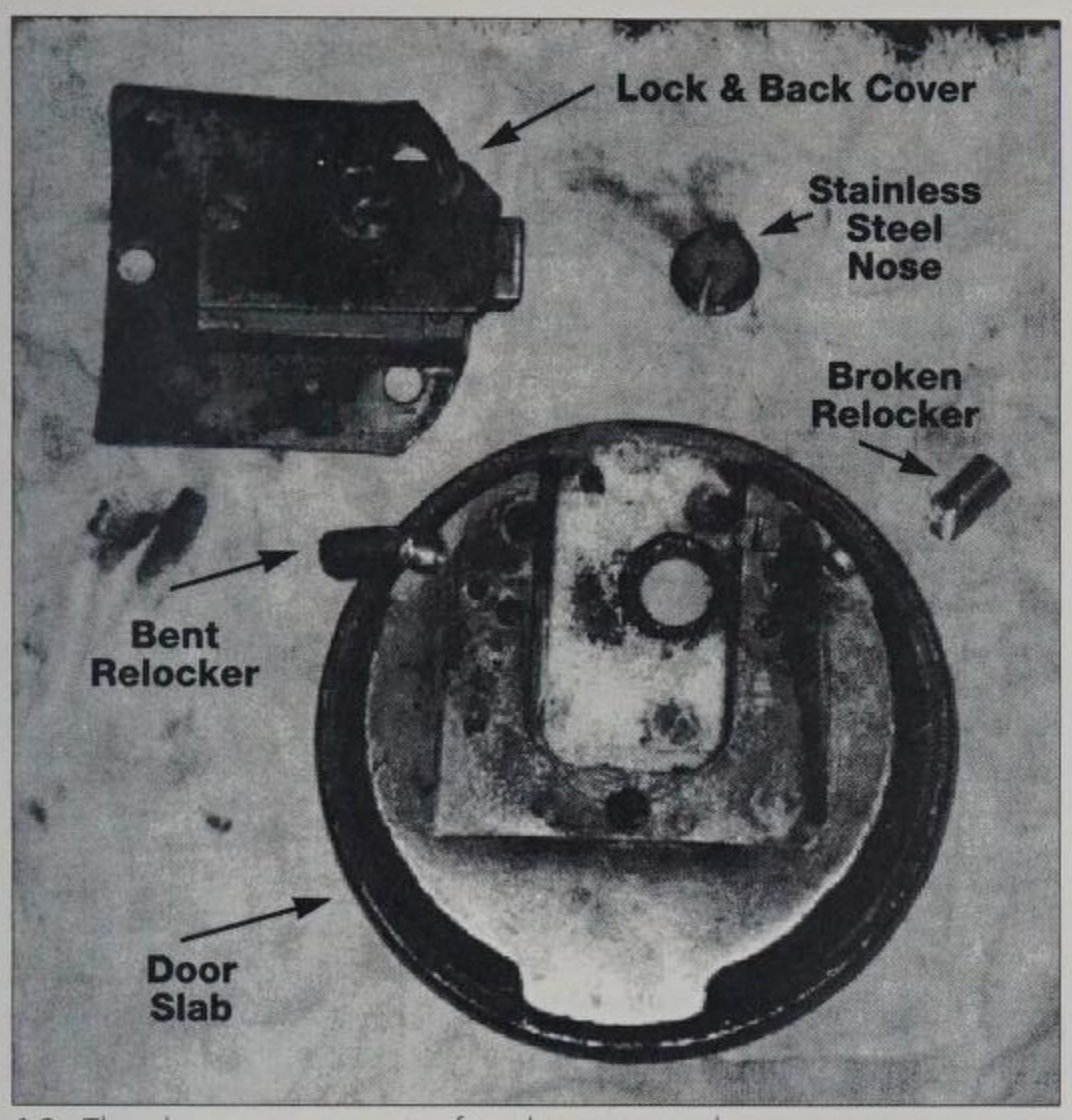
Photograph 10 shows the components of the door: the lock and back cover, the stainless steel nose, the door slab, one bent relocker and one broken relocker.



8. A relocker is just now visible.



9. The removed door with showing the bent and missing relockers.



10. The door components after door removal.

With one exception: NEVER, NEVER, NEVER try to use the puller on an In-A-Floor model D. The model D is a double door safe that has the inner door right underneath the outer door. There is no space between them. If you try to punch the keylock on the outer door of a model D, the back cover will punch in just far enough to set off the relockers, but will not leave you enough room to put the puller in the keyhole. Now you have to drill for the relockers, like it or not.

Well, like it or not, that is about all I have to say this month. The addresses, phone numbers and contact persons of the companies mentioned in this two-part article are included below. See ya next month.

In-A-Floor Safe Company
Carl Belknap
PO Box 8312
La Crescenta, CA 91224-0312
(213) 749-2448

Lee Industries
Brian Lee
2200 Mettler Rd.
Lodi, CA 95240
(209) 462-6991

Harry C. Miller
105 Bridle Ct.
Nicholasville, KY 40356
(606) 885-3482

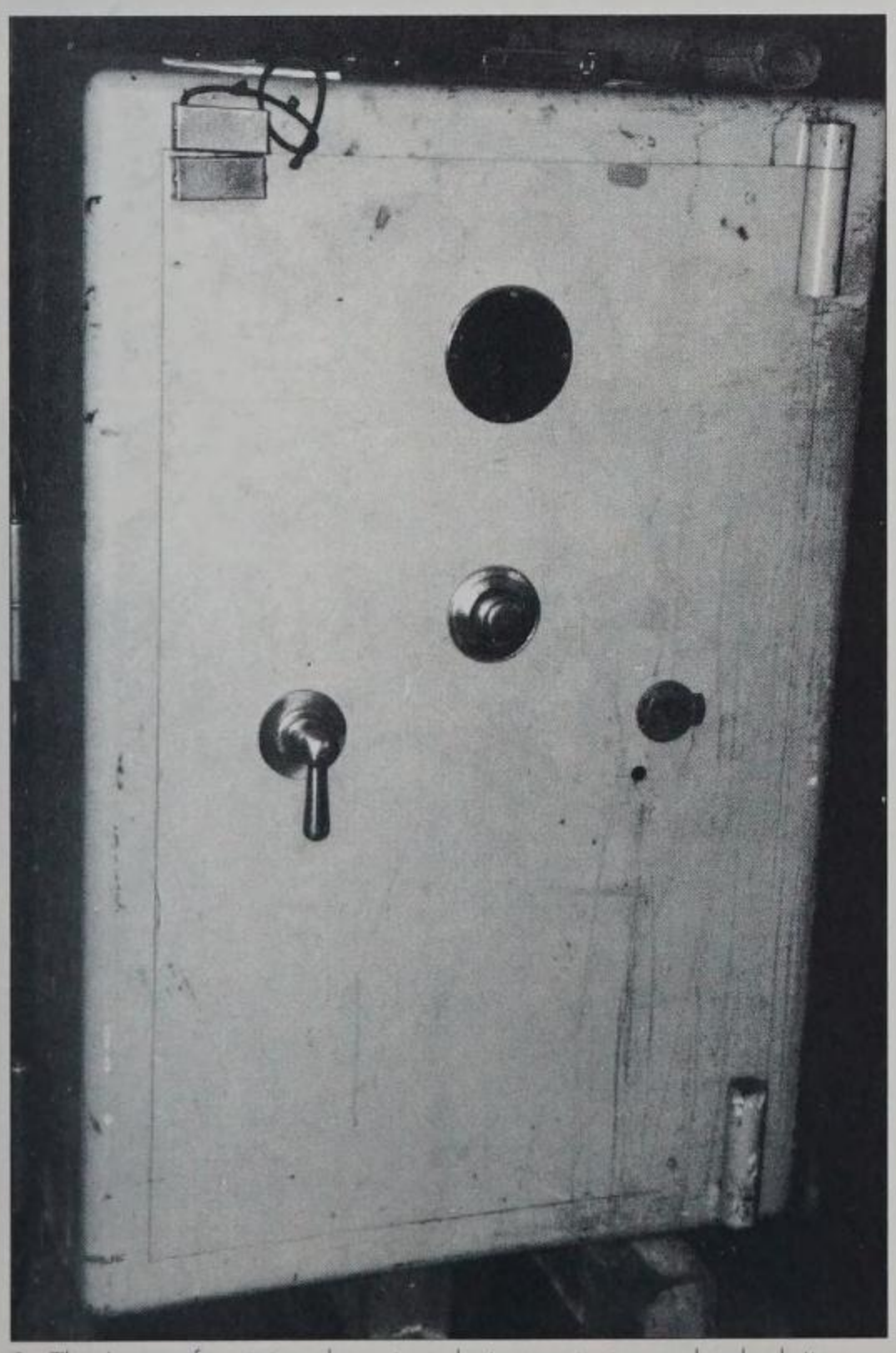
by Dave McOmie

LICKING YOUR LIPS, PART 1

"When Don Spenard and I had to open a Dutch made Lips high security safe, we were clueless."

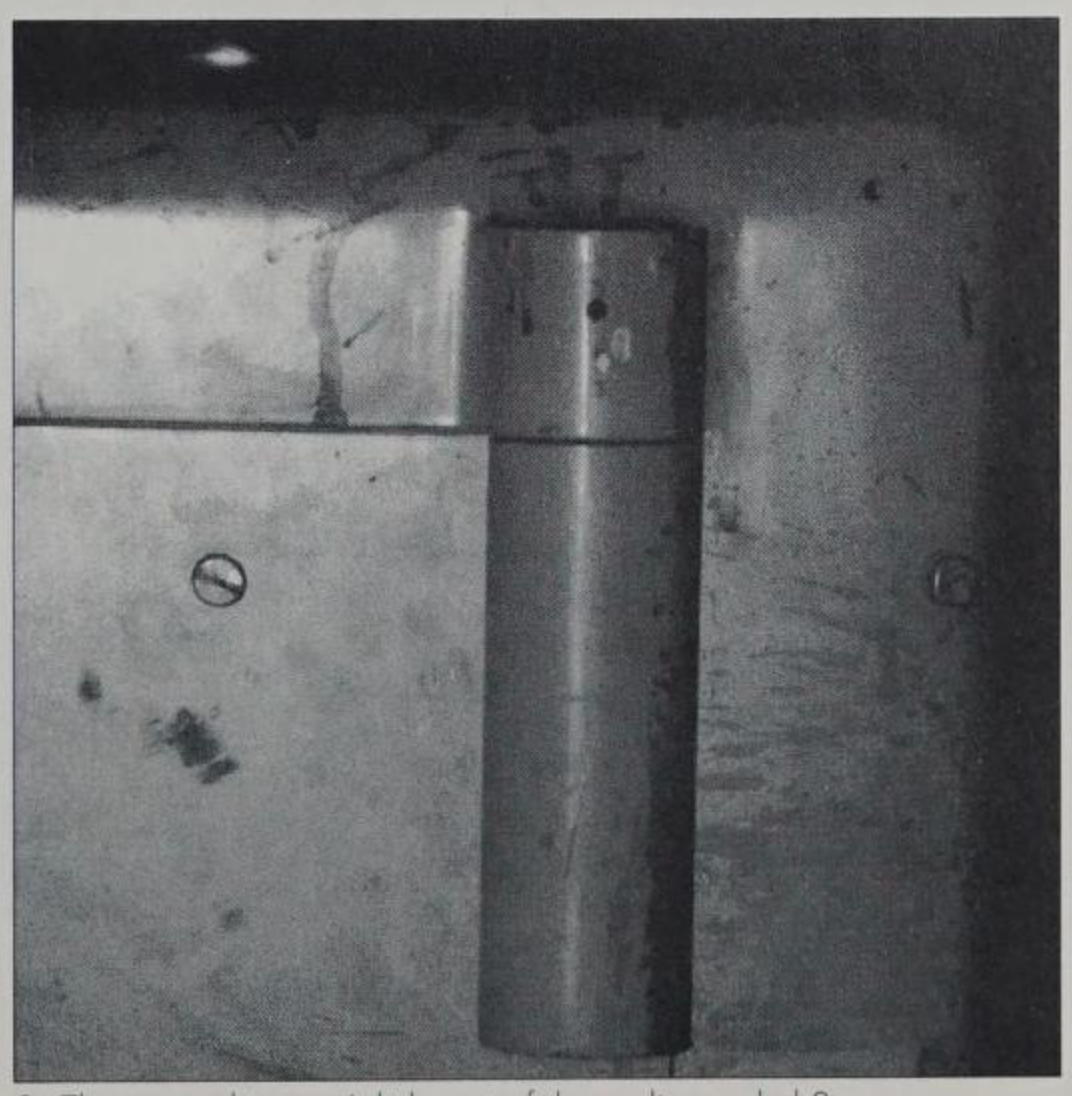
A few months back, I emphasized the importance of networking, and listed three major benefits: First, by exchanging photos and info, you and those in your network increase your respective technical libraries. Second, you meet people with varying areas of interest and expertise, such as antique safes, antique safe locks, high security safes, comb-locks, lever locks, etc.; so when you need info on something a little obscure, you have a source (besides me) to call. Third, you make acquaintances who may, over time, become friends. Let us never underestimate the value of good friends. Aristotle considered friendship such an important virtue that he devoted two chapters to it in his Nicomachean Ethics.

Recently, my friend Don Spenard and I were glad to have a networking friend in Holland when we had to open a Dutch-made Lips high-security safe. We were clueless, but Wim van den Hoogen, Holland's premiere safecracker, was not. He answered our fax-query and told us everything we wanted to know (but were afraid to ask) about the Lips safe. The following two-part photo story will tell the tale.

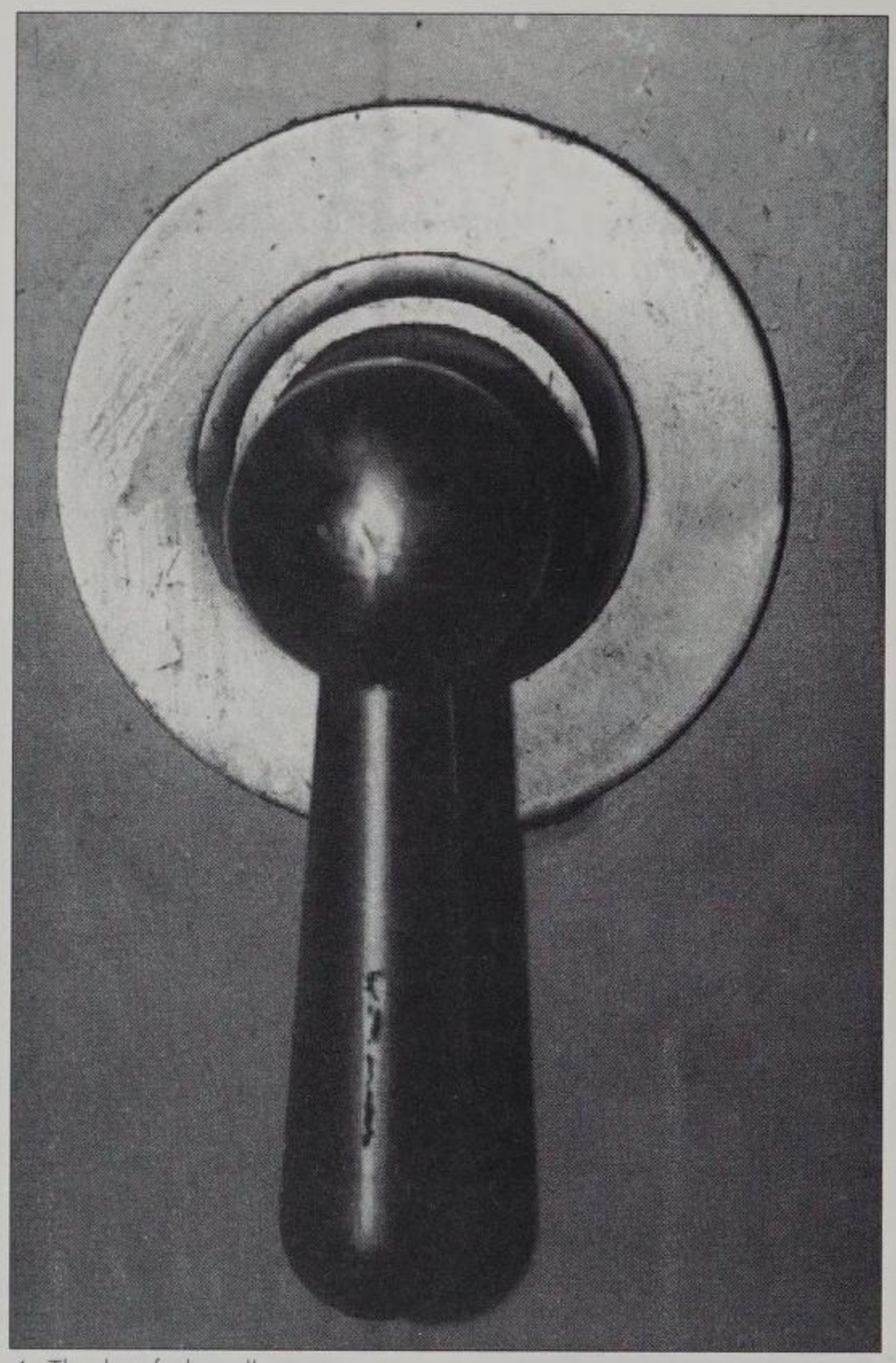


1. The Lips safe, sitting there just daring us to try and unlock its secrets. Notice the unusual placement of the dial, handle, and keylock escutcheon.

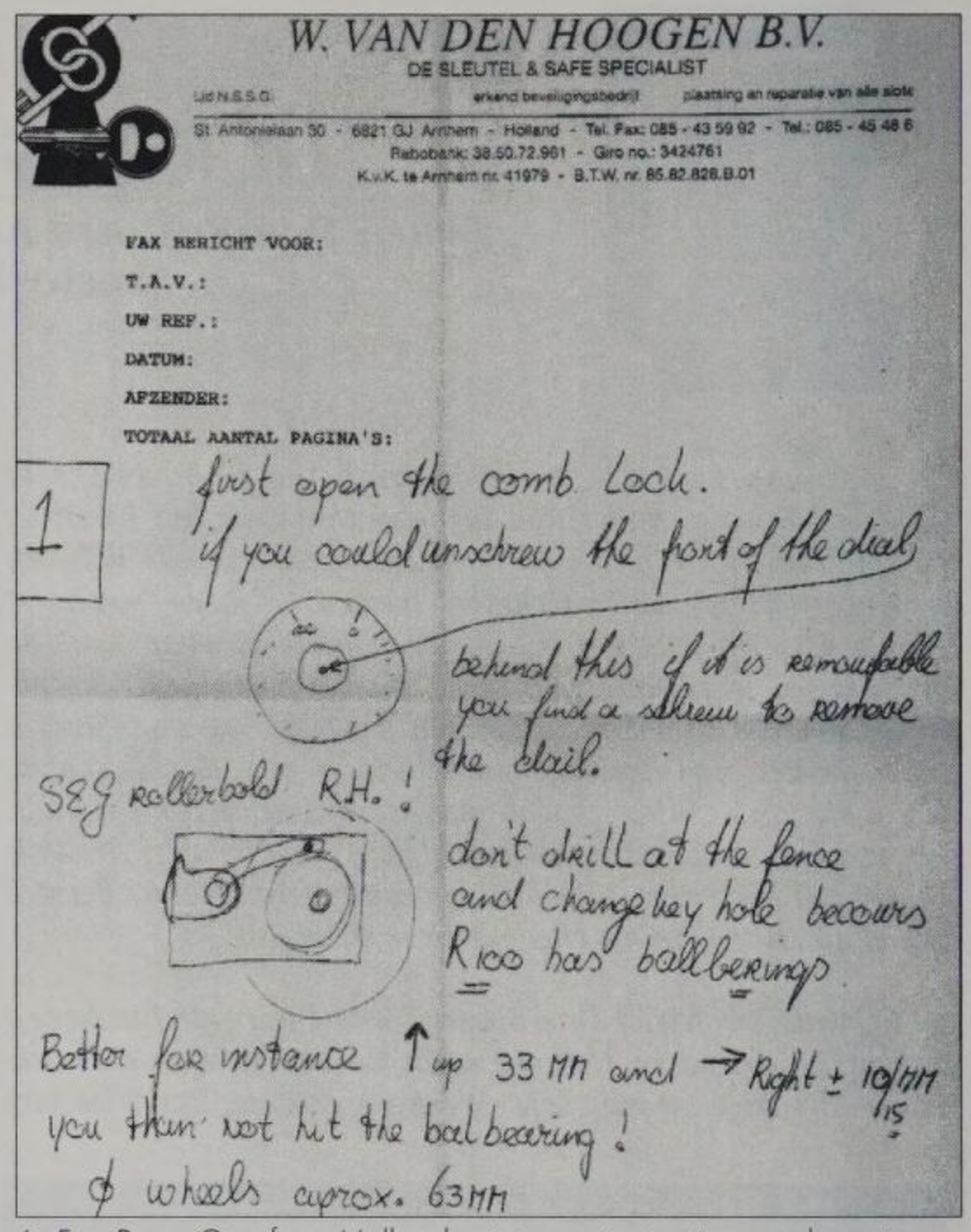
2. A close-up of the logo. If anyone knows, I would love to hear the history behind this winged creature.



3. The upper hinge. A little out of the ordinary, huh?



4. The beefy handle.

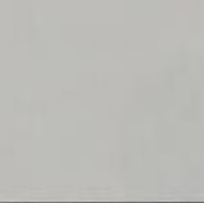


W. VAN DEN HOOGEN B.V.
DE SLEUTEL & SAFE SPECIALIST
Lid N.S.S.G. erkend beveiligingsbedrijf plaatsing en reparatie van alle sloten
St. Antonielaan 30 - 6821 GJ Arnhem - Holland - Tel. Fax: 085 - 43 59 92 - Tel.: 085 - 45 48 6
Rabobank: 38.50.72.961 - Giro no.: 3424761
K.v.K. te Arnhem nr. 41979 - B.T.W. nr. 85.82.828.B.01

FAX BERICHT VOOR:
T.A.V.:
UW REF.:
DATUM:
AFZENDER:
TOTAAL AANTAL PAGINA'S:

1

first open the comb lock.
if you could unscrew the front of the dial



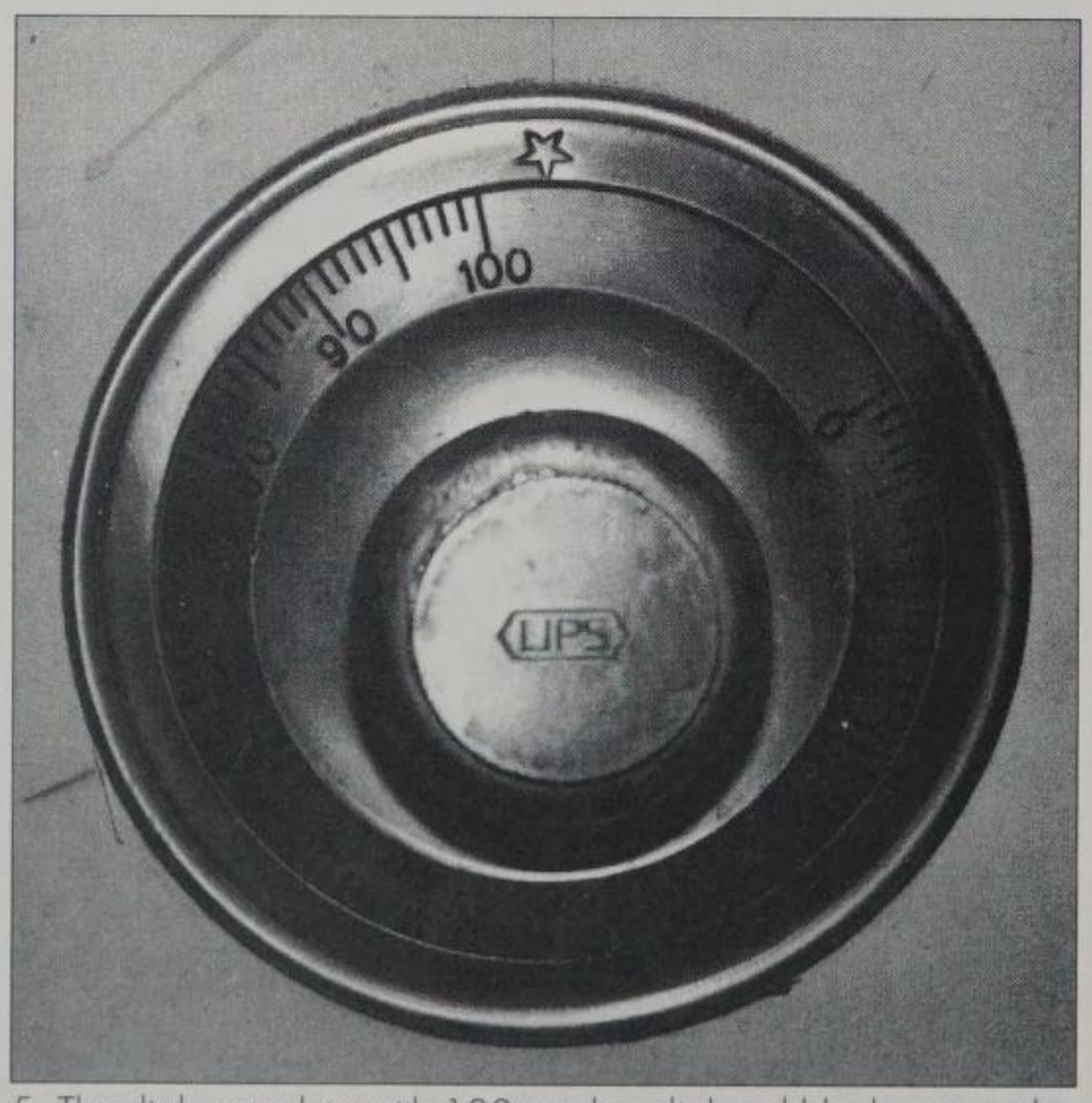
behind this if it is removable
you find a screw to remove
the dial.

SEG rollerbold R.H. !

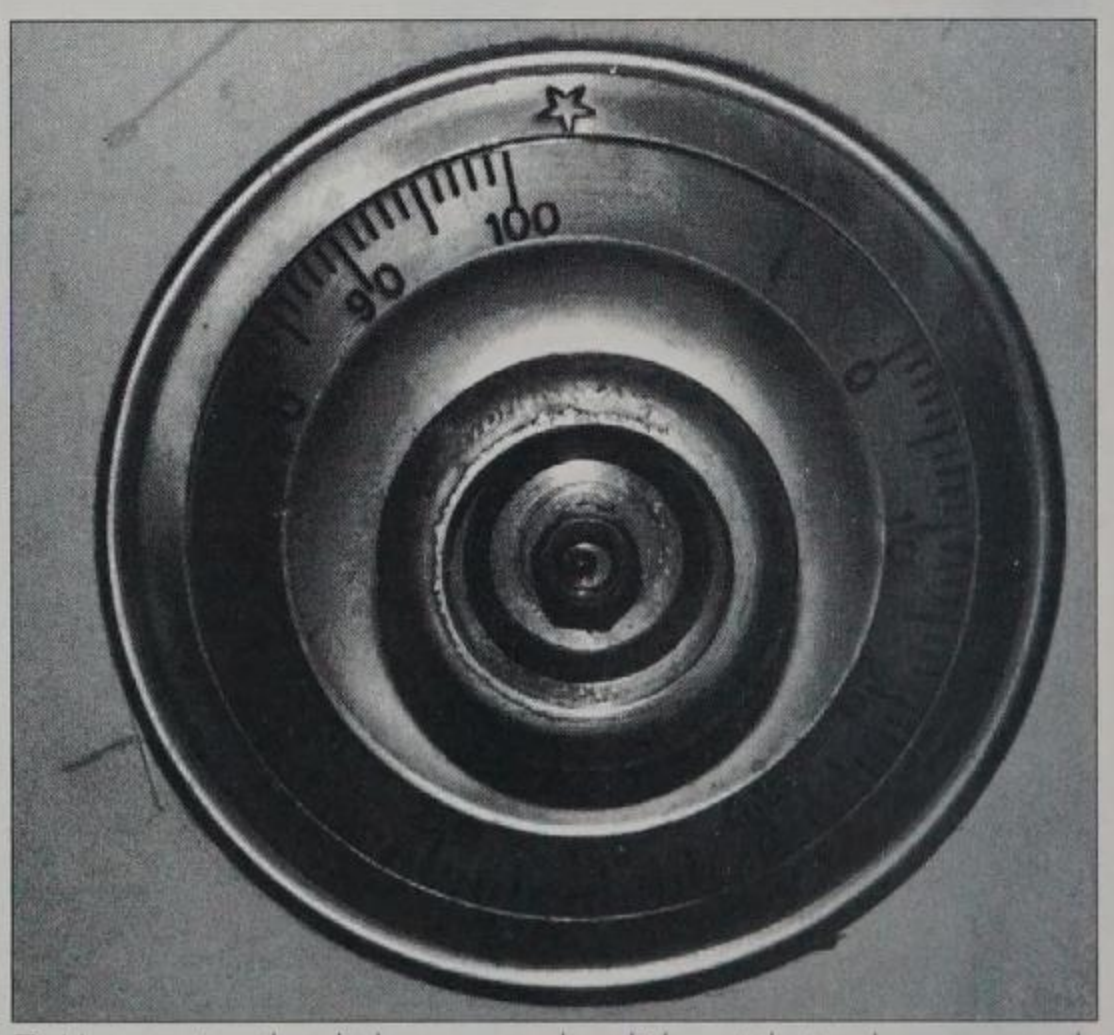
don't drill at the fence
and change key hole because
R100 has ballbearings

Better for instance ↑ up 33 MM and → Right ± 10/11MM
you then not hit the ballbearing !
ϕ wheels aprox. 63MM

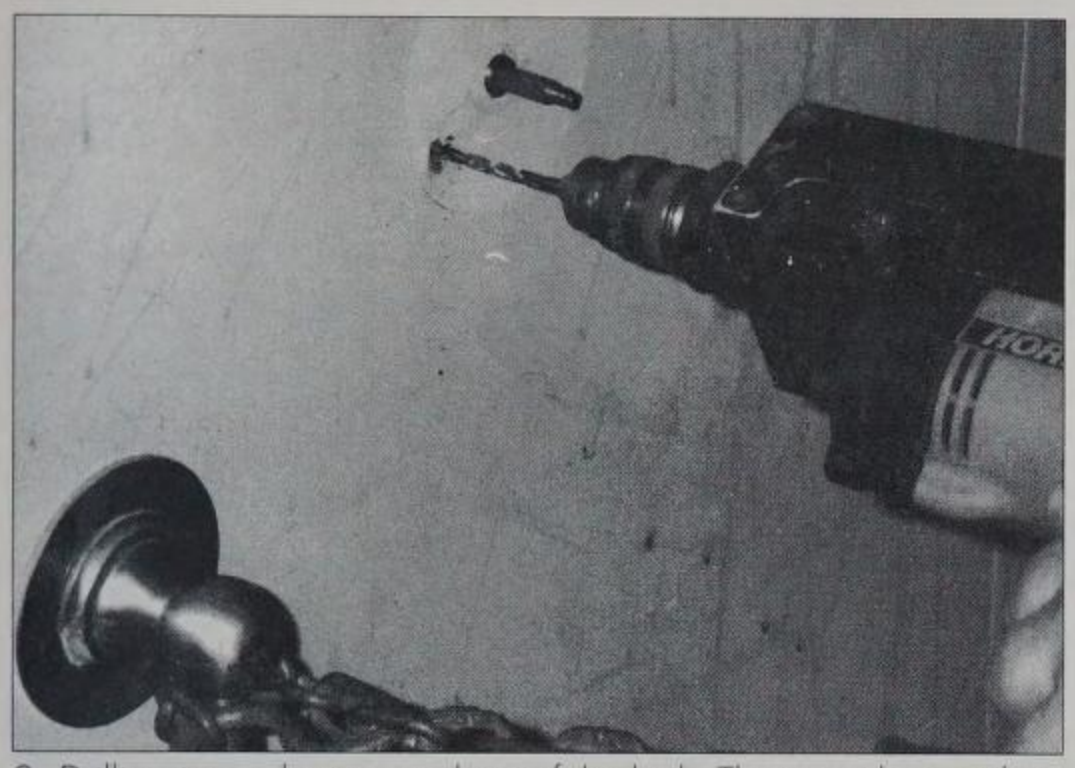
6. Fax Page One from Holland, giving us instructions on how to defeat the keylock. There is no glass in the door, but there is a large ball bearing right at the drop-in point, so we should drill away from the fence. Wim explains that the dial is removable via the dial cap.



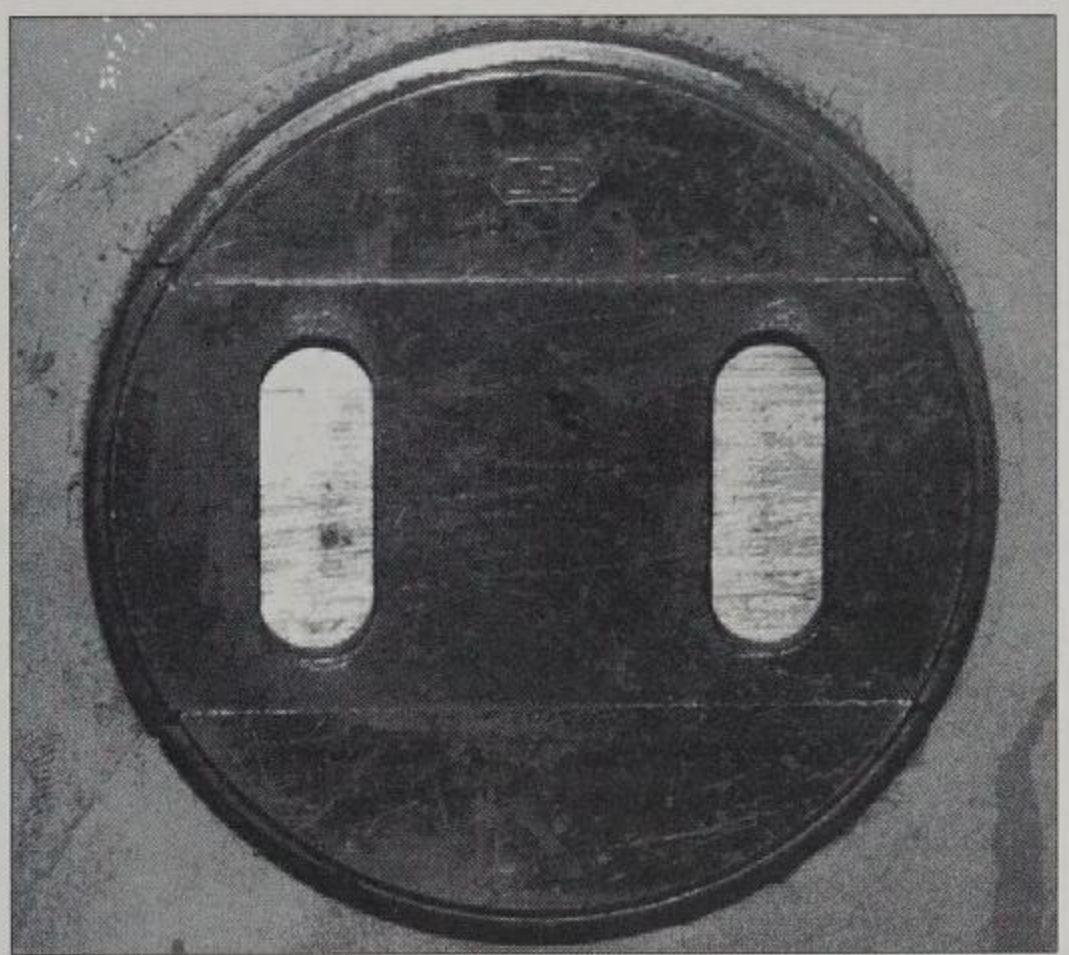
5. The dial, complete with 100 number dial and blank area in the "forbidden zone." The line in the forbidden zone was drawn by yours truly to mark the right contact point in a futile attempt at manipulation. Maybe Phil or Skip or Jeff could have gotten it, but mere mortals like me and Don got nowhere.



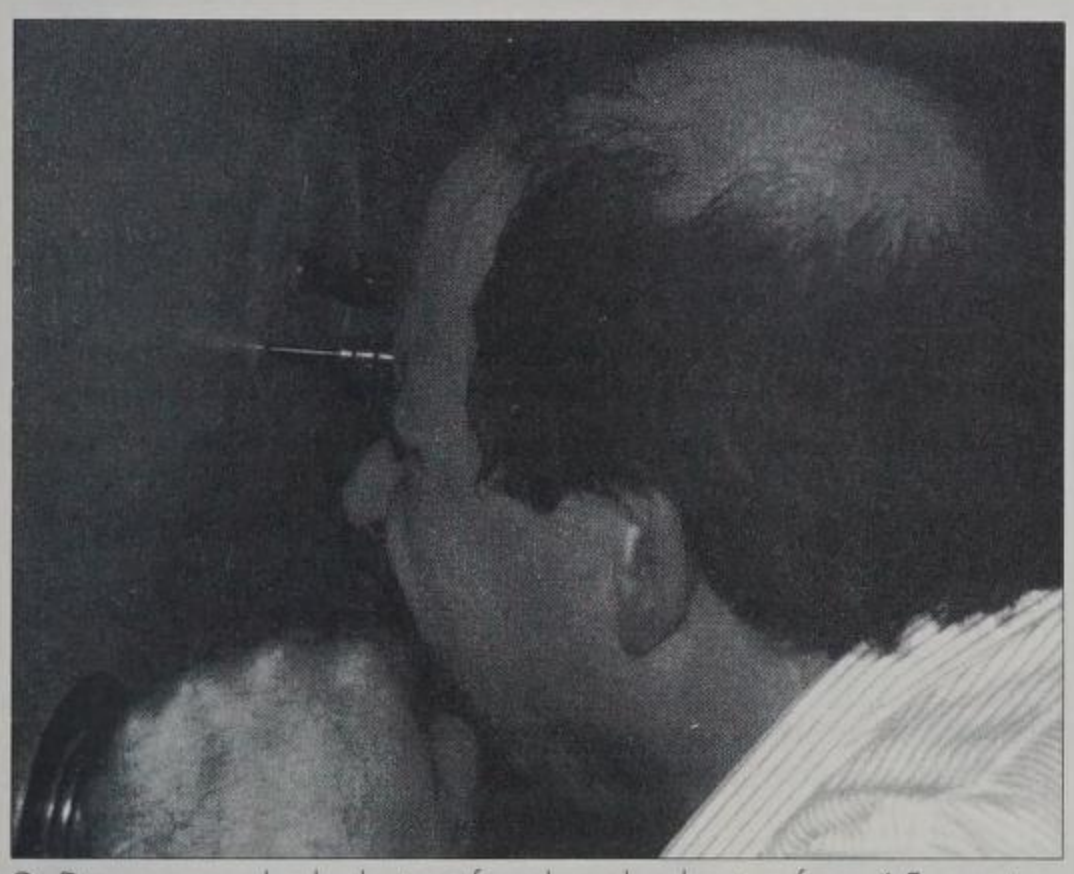
7. Unscrewing the dial cap reveals a little nut that, when removed, allows the dial to come off in your hands.



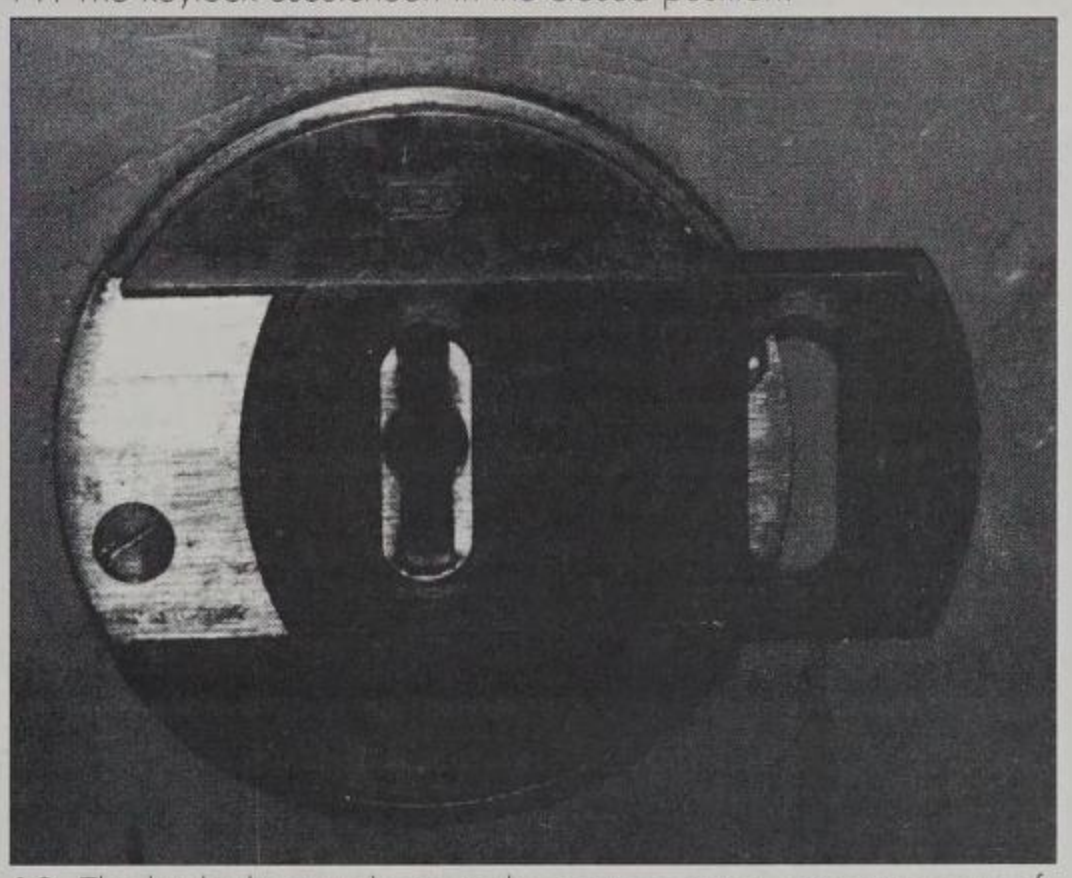
8. Drilling into a lower quadrant of the lock. This was done with a 3/16" hole. Could have done it with a 1/8" hole, but we didn't have one long enough and were too lazy to go buy one.



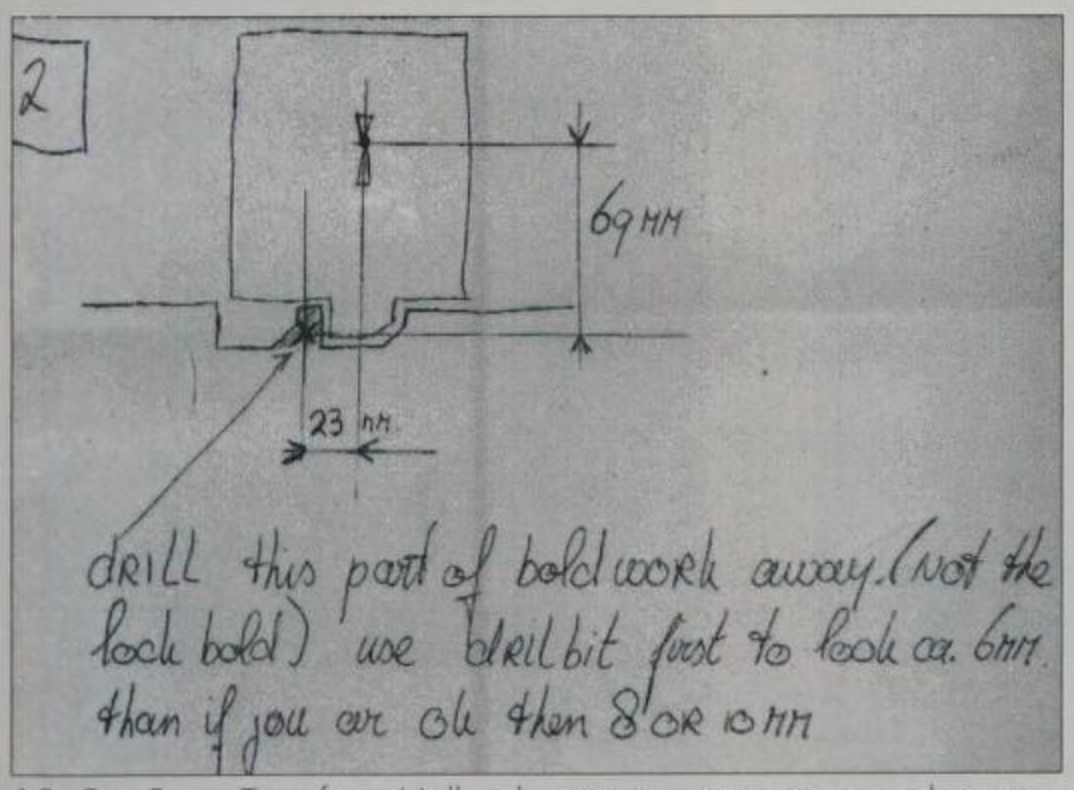
11. The keylock escutcheon in the closed position.



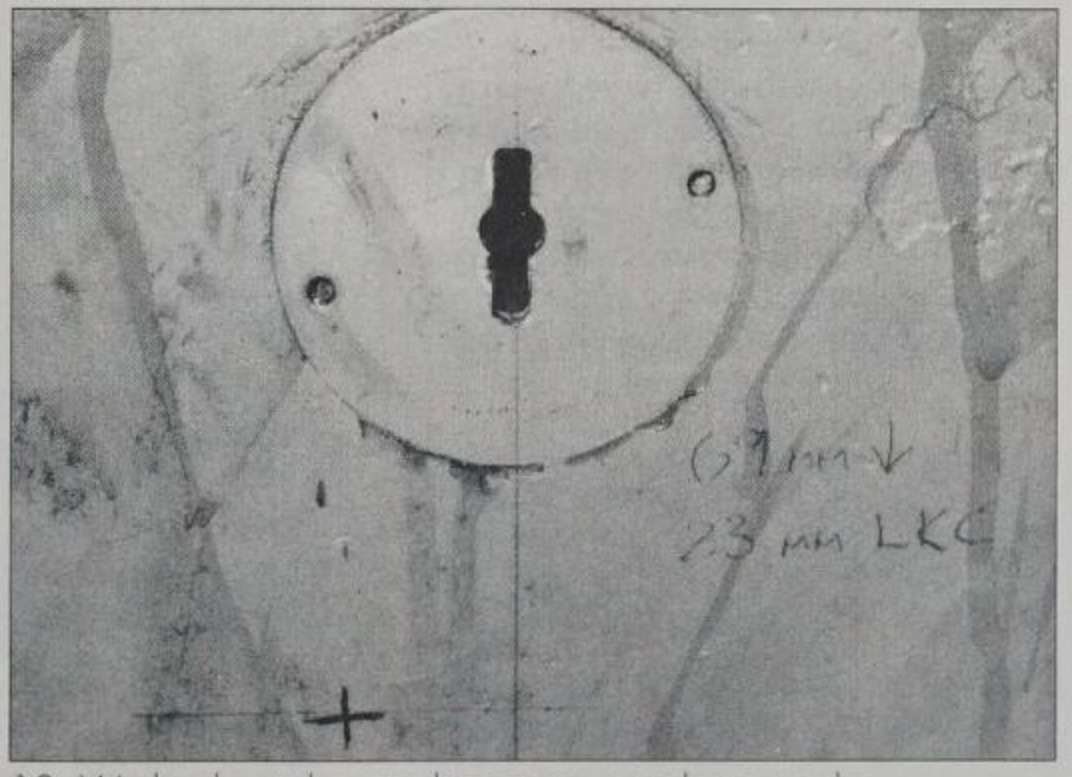
9. Don scopes the lock, transfers the wheel gates from 65 over to drop in, which is at about 98, and unlocks the comb-lock. We try the handle but it won't budge — the keylock is locked. Time to use some more information from Wim.



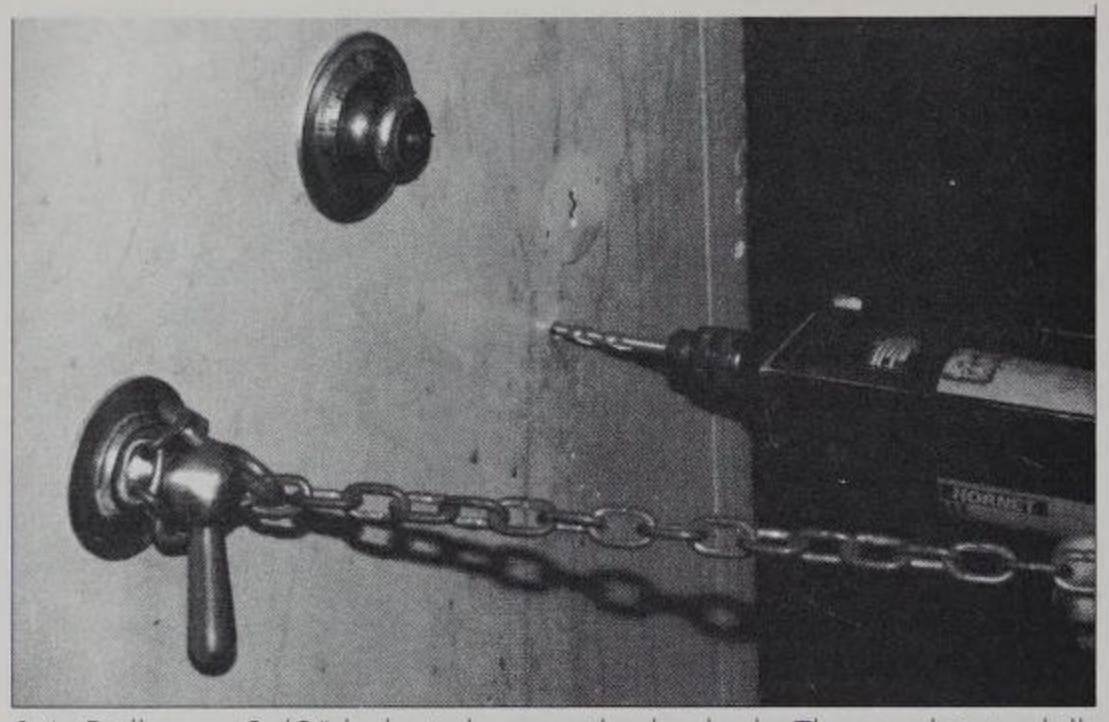
12. The keylock escutcheon in the open position, exposing one of the attaching screws. Sliding the escutcheon back just a little exposes the other attaching screw.



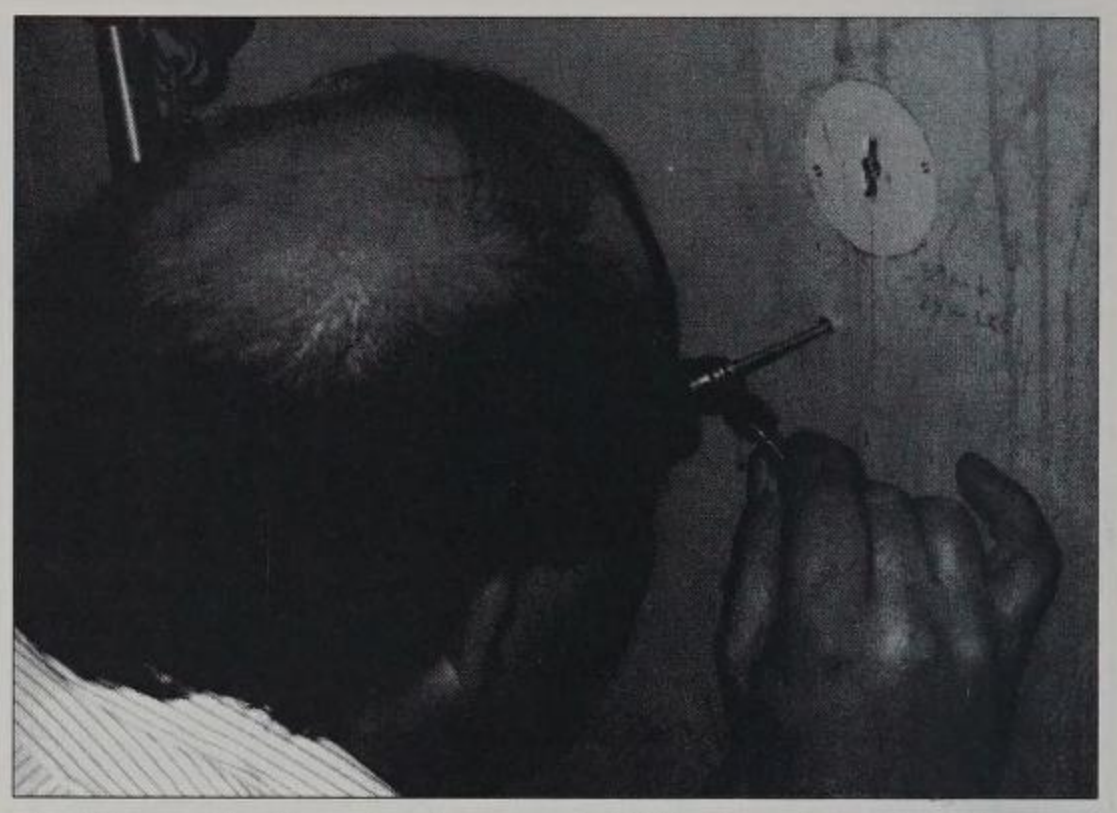
10. Fax Page Two from Holland, giving us instructions on how to defeat the keylock. Wim recommends bypassing the keylock and drilling away the part of the boltwork that the lockbolt of the keylock is blocking.



13. We back out the attaching screws and remove the escutcheon. This gives us a flat surface on which to accurately measure and mark the drill point for bypassing the keylock. Wim has instructed us to drill at 23mm left of keyhole center, 69mm down. So, using a metric ruler, we mark it off and put a cross right where we will center punch and drill.



14. Drilling a 3/8" hole to bypass the keylock. The goal is to drill away the little metal block that butts up against the lockbolt of the keylock. With this little metal block gone, the keylock blocks nothing — the safe can be opened.

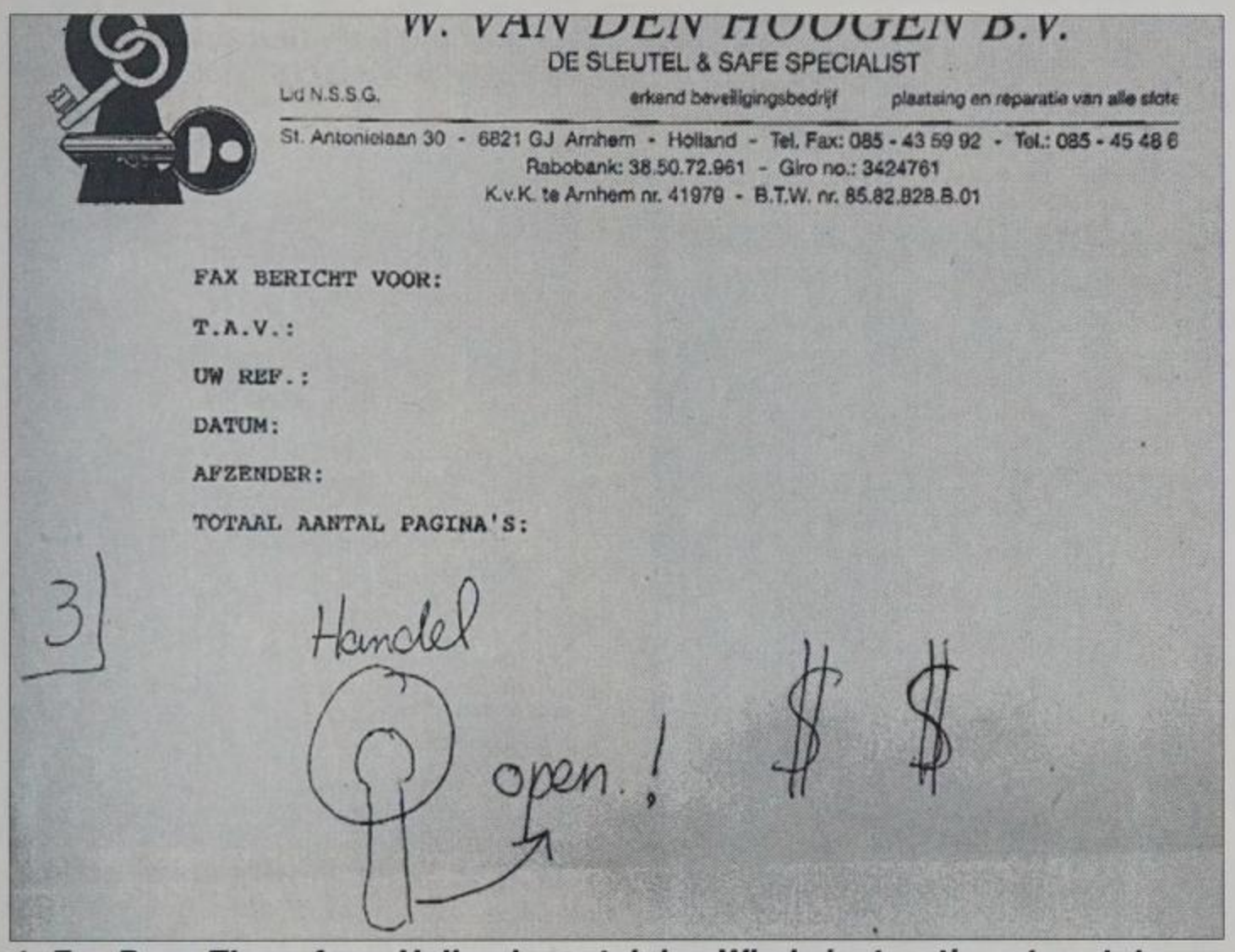


15. We don't quite get it all removed. A little tiny piece of metal remains — just enough to prevent the boltwork from retracting. We are getting frustrated. Finally, we enlarge the hole to 1/2" and finish the job. All that remains is to throw the handle and open the safe.

Next month: we open the door and look inside the Lips.

LICKING YOUR LIPS, PART 2

Without Wim van den Hoogen, we no doubt would have gotten the safe open, but would likely have ruined the keylock.


W. VAN DEN HOOGEN B.V.
DE SLEUTEL & SAFE SPECIALIST
Lid N.S.S.G. erkend beveiligingsbedrijf plaatsing en reparatie van alle slote
St. Antonielaan 30 - 6821 GJ Arnhem - Holland - Tel. Fax: 085 - 43 59 92 - Tel.: 085 - 45 48 6
Rabobank: 38.50.72.961 - Giro no.: 3424761
K.v.K. te Arnhem nr. 41979 - B.T.W. nr. 85.82.828.B.01

FAX BERICHT VOOR:

T.A.V.:

UW REF.:

DATUM:

AFZENDER:

TOTAAL AANTAL PAGINA'S:

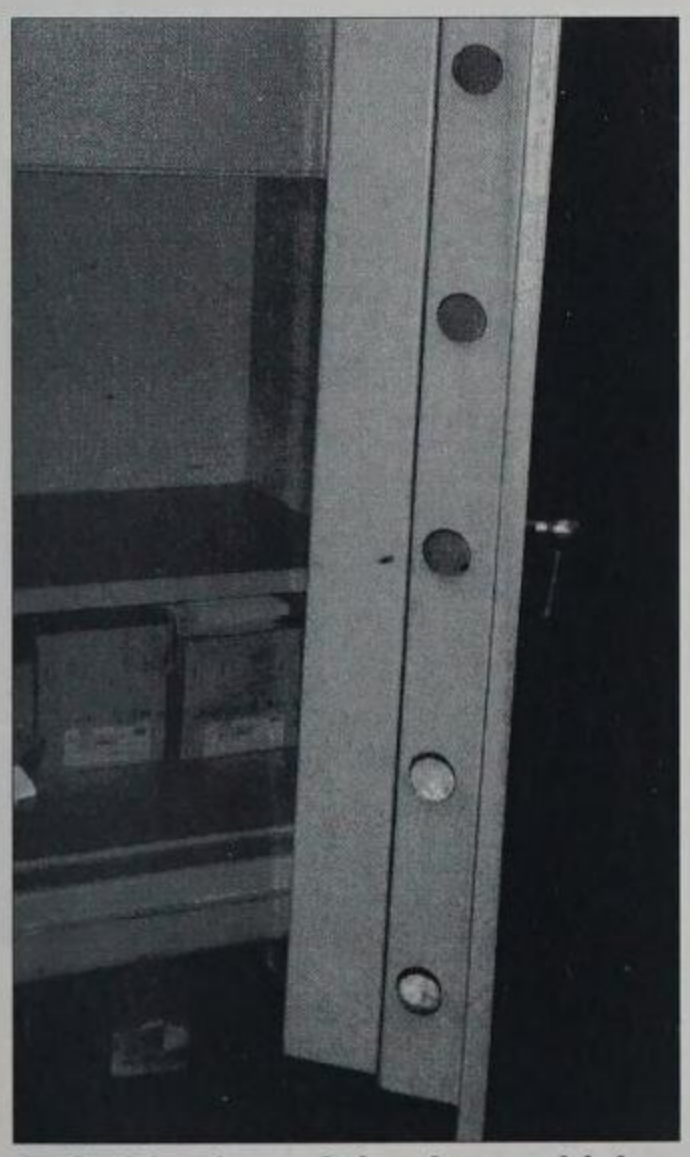
3

Handel

open.!

$ $

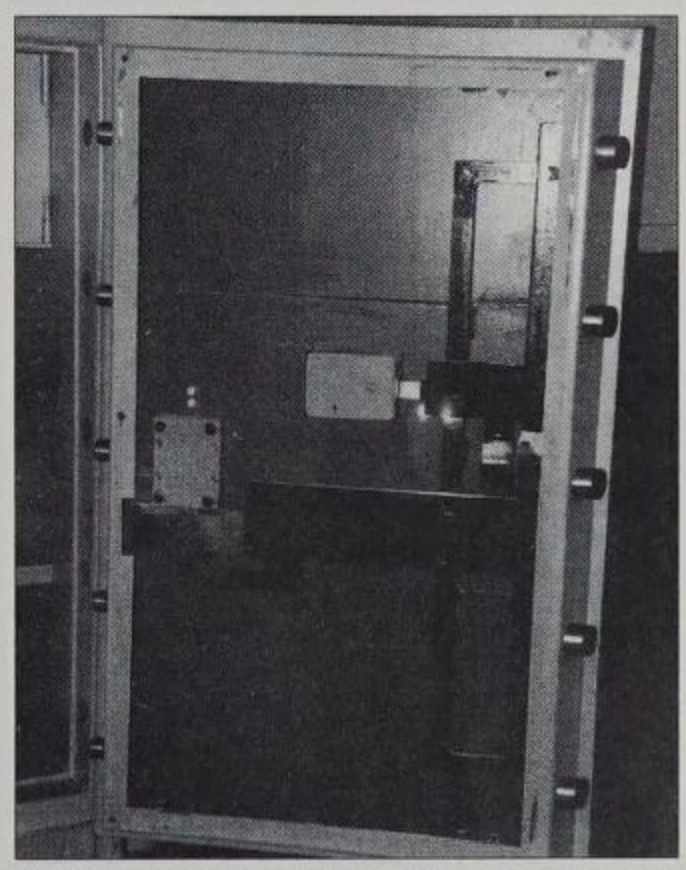
1. Fax Page Three from Holland, containing Wim's instructions to rotate the handle counter-clockwise and collect big bucks!



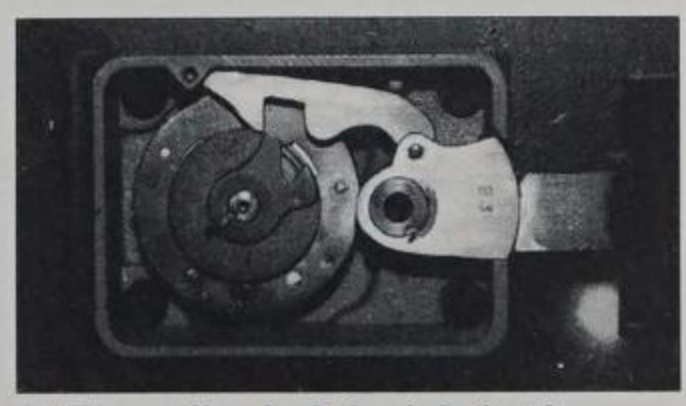
2. A side view of the door, which has five locking bolts on the opening side, but none top or bottom.

3. The back of the door with back panel still attached. This is one heavy José of a back panel – it just about broke Don's big toe. Luckily, he was wearing the steel-toed He-Man boots he bought from Dave Richardson. Notice the change key hole that goes all the way through the back panel.

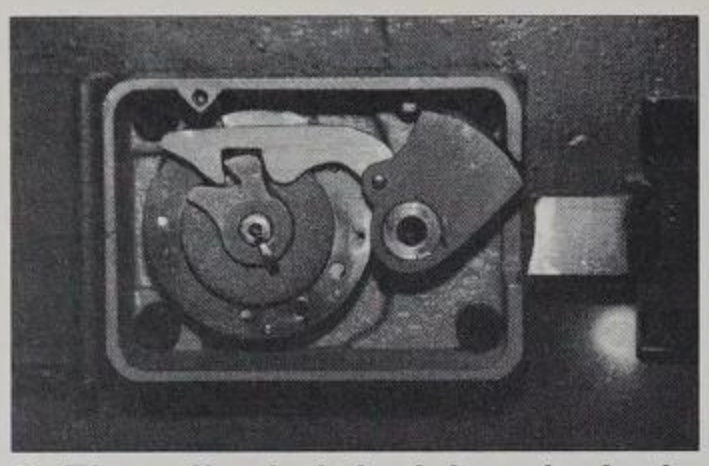
In Part II, we look inside the Lips safe that Don and I drilled open. Once again, a reminder to everyone: This safe opening, which was a potential nightmare, ended up being fairly easy. Why? Because Don and I developed a network of friends and acquaintances, some of whom have knowledge or expertise in areas of which we are either weak or ignorant. Network, my friends. It is the secret of your success as a safecracker.



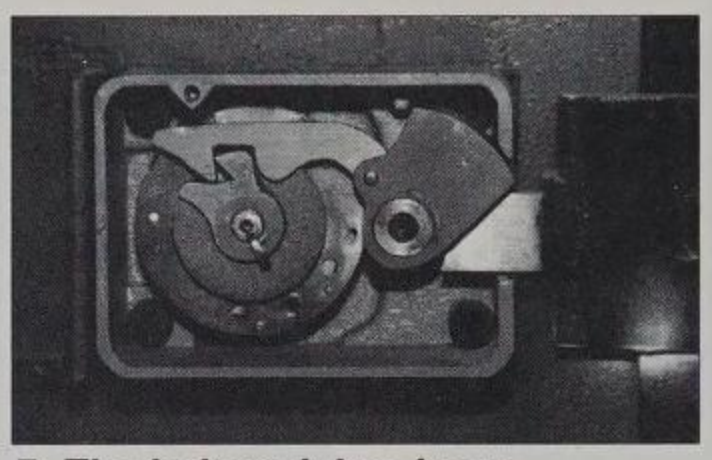
4. The inside of the Lips safe door. Notice the five dead bolts on the hinge side of the door. Also notice that these bolts do not lock behind a welded on (or tacked on) strip of metal. Instead, each dead bolt has its own individual bolt cup in the body of the safe. The roller bolt lock is mounted RH, and the keylock is mounted VD.



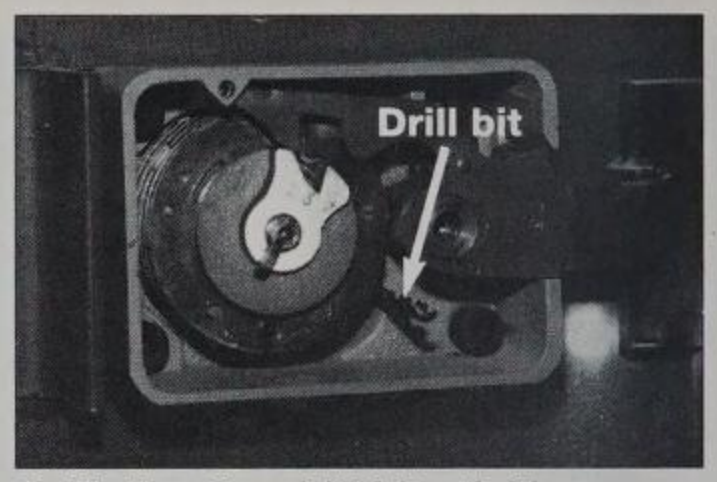
5. The roller bolt lock is in the locked position. In this position, the lockbolt blocks travel of the tailpiece that comes off the boltbar.



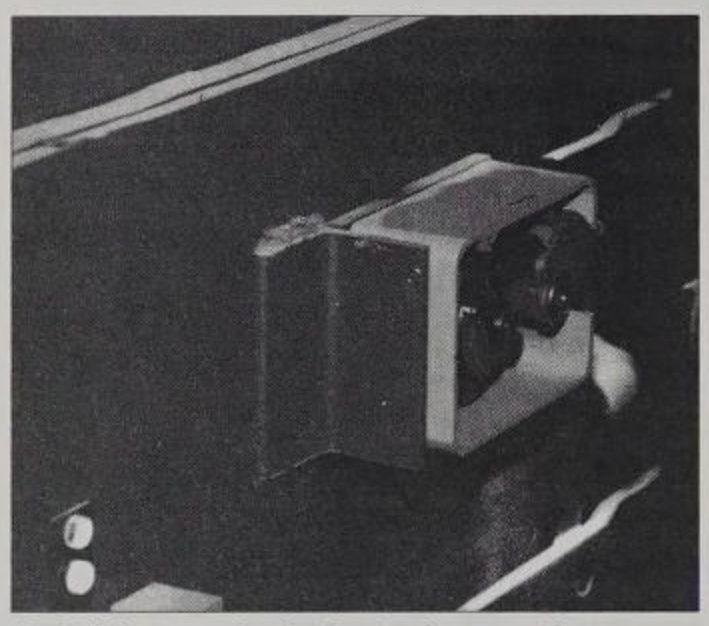
6. The roller bolt lock is unlocked, but the boltwork is still extended. Notice that the tailpiece has not moved.



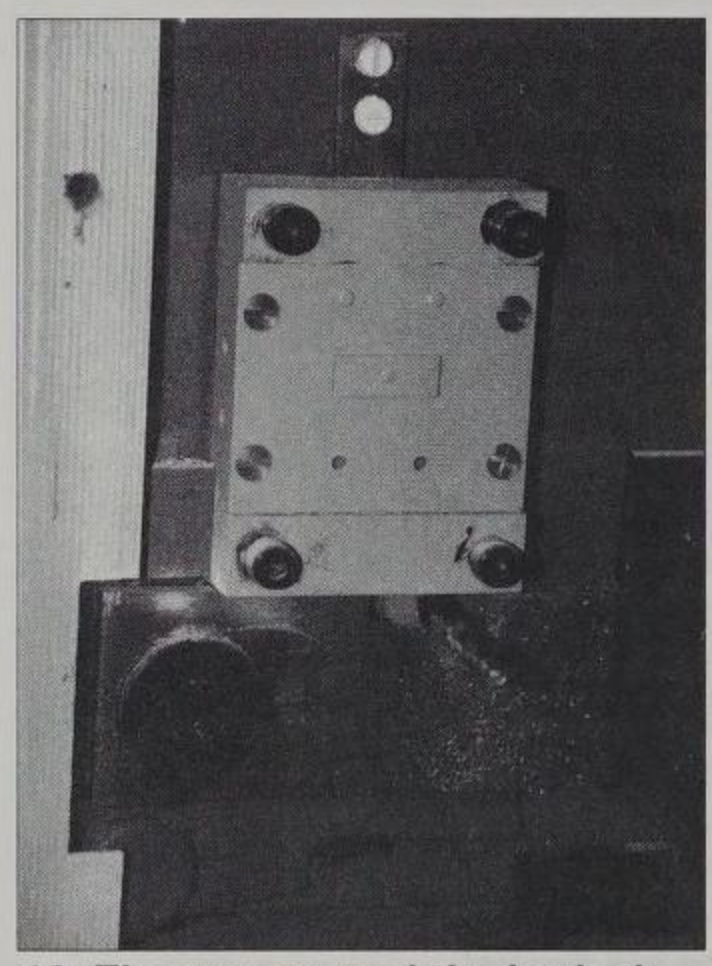
7. The boltwork has been retracted. Notice that with the lockbolt pivoted up and out of the way, the tailpiece was free to enter the lockcase as the handle was rotated and the boltwork retracted.



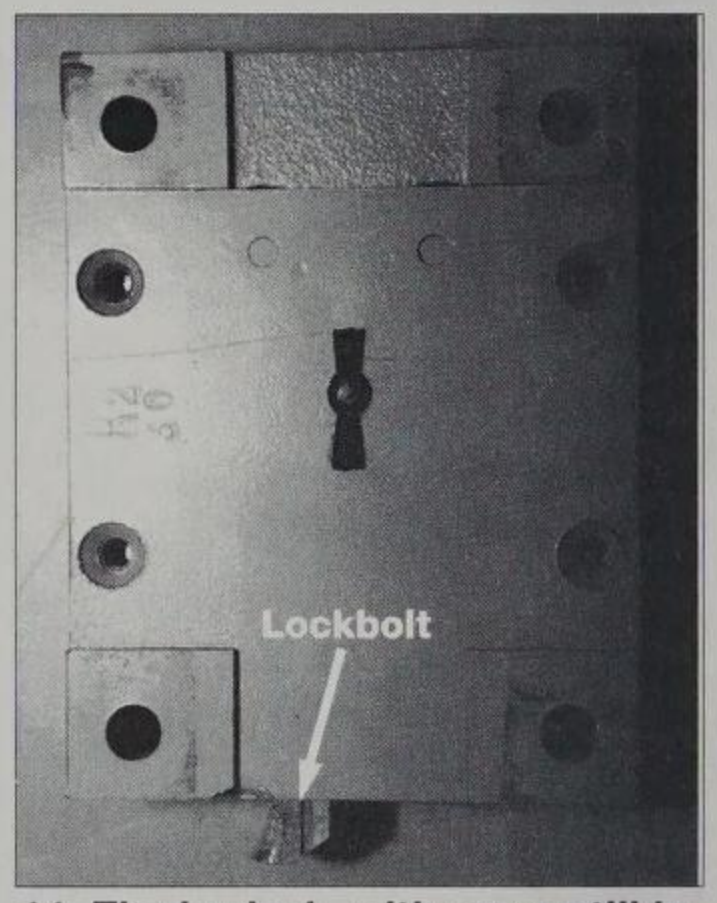
8. Notice the drill bit sticking through the lock. This shows the path of the hole that opened the comb-lock – a 3/16" hole, no less.



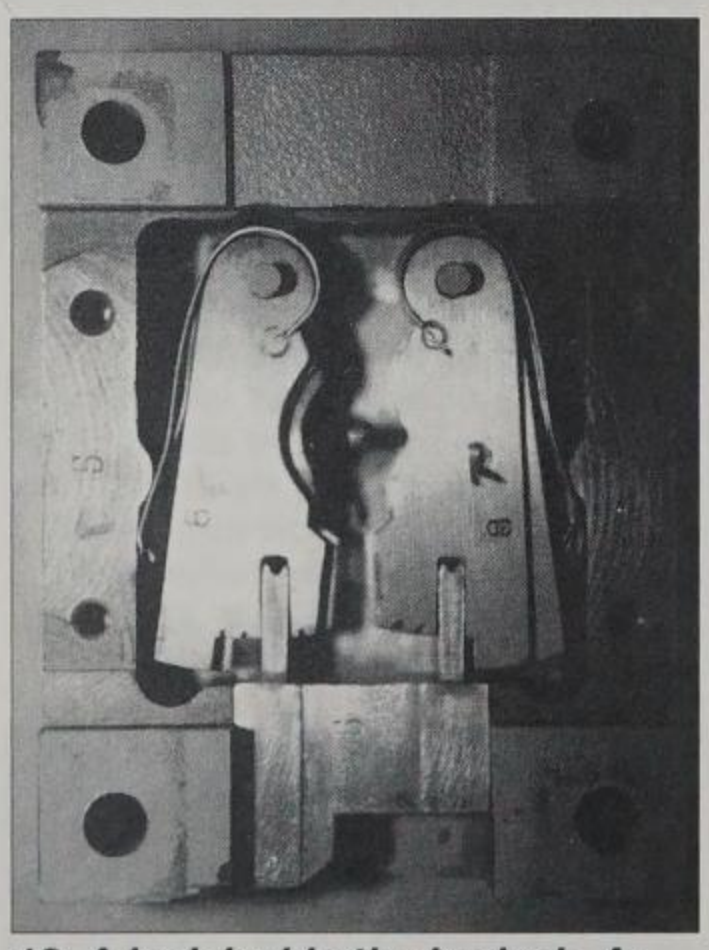
9. This angled shot shows the steel plate alongside the lock. This plate is not hardened, so it probably was not intended to protect against side-drilling attacks to read the combination. It was probably intended to give the lock stability in case of a side-punching attack on the boltwork.



10. The area around the keylock. Notice the drill bit. There used to be a little block of metal on the boltbar right where the drill bit is. This little block is what the lockbolt of the keylock blocked when it was extended. Once the little block was drilled away, we could throw the handle and retract the boltwork, even though the lockbolt of the keylock was still extended. Notice the brass strip visible above the keylock. Now notice the relocker way down below the keylock. The brass strip is about ten inches long, and has an "L" on the bottom of it that holds the relocker up. Drilling to punch the lockbolt of the keylock would likely set off the relocker.

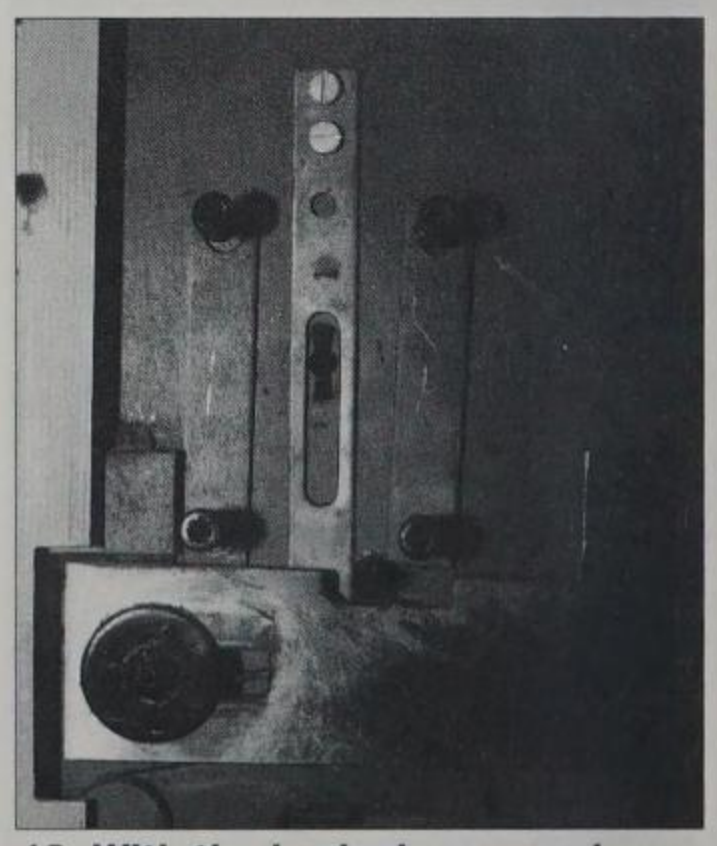


11. The keylock, with cover still in place. The post is clearly visible in the center of the keyway. Notice the lockbolt. We dinged it just a little bit with the drill, but this is pretty much its normal shape. Odd, huh?



12. A look inside the keylock. As you can see, it has a very thick steel case. Inside the case are two stumps and two complete sets of levers. Without Wim's help, this keylock would have been a nightmare. Not being familiar with this keylock, we probably would have ruined it getting it open.

All in all, Don and I were pleased with this opening. It serves as a shining example of the benefits of networking. Thanks Wim, for making us look good and for being a good friend. I'll see all you networkers next month!

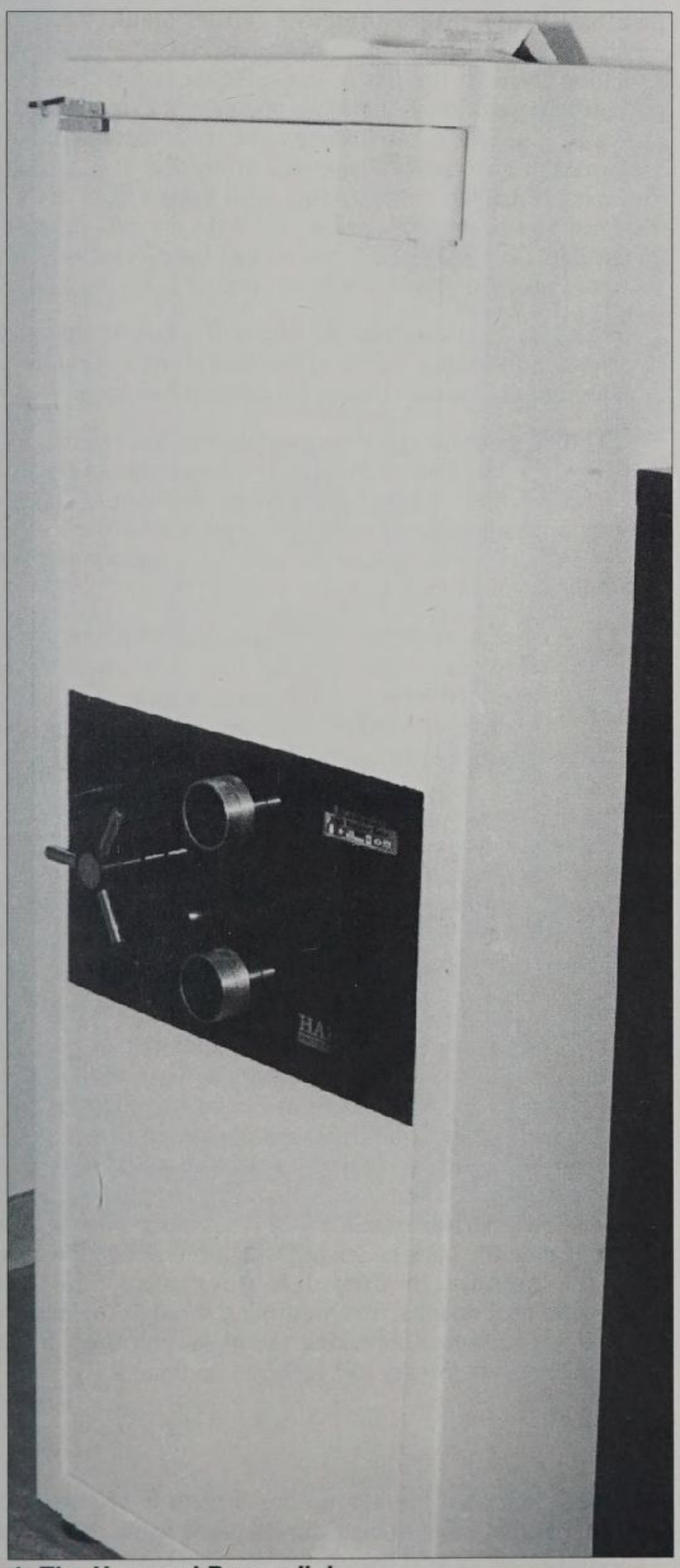


13. With the keylock removed, we can see the relocker and the long brass strip that serves as the relocker detent. We can also see the hole just to the right of the brass strip – this is the hole that drilled off the little metal block on the boltbar.

by Dave McOmie

THE HARWOOD BERNARDINI

In the early 1980s, John Harwood toured the country pushing English Tanns. Now we will look at one of his Bernardinis.



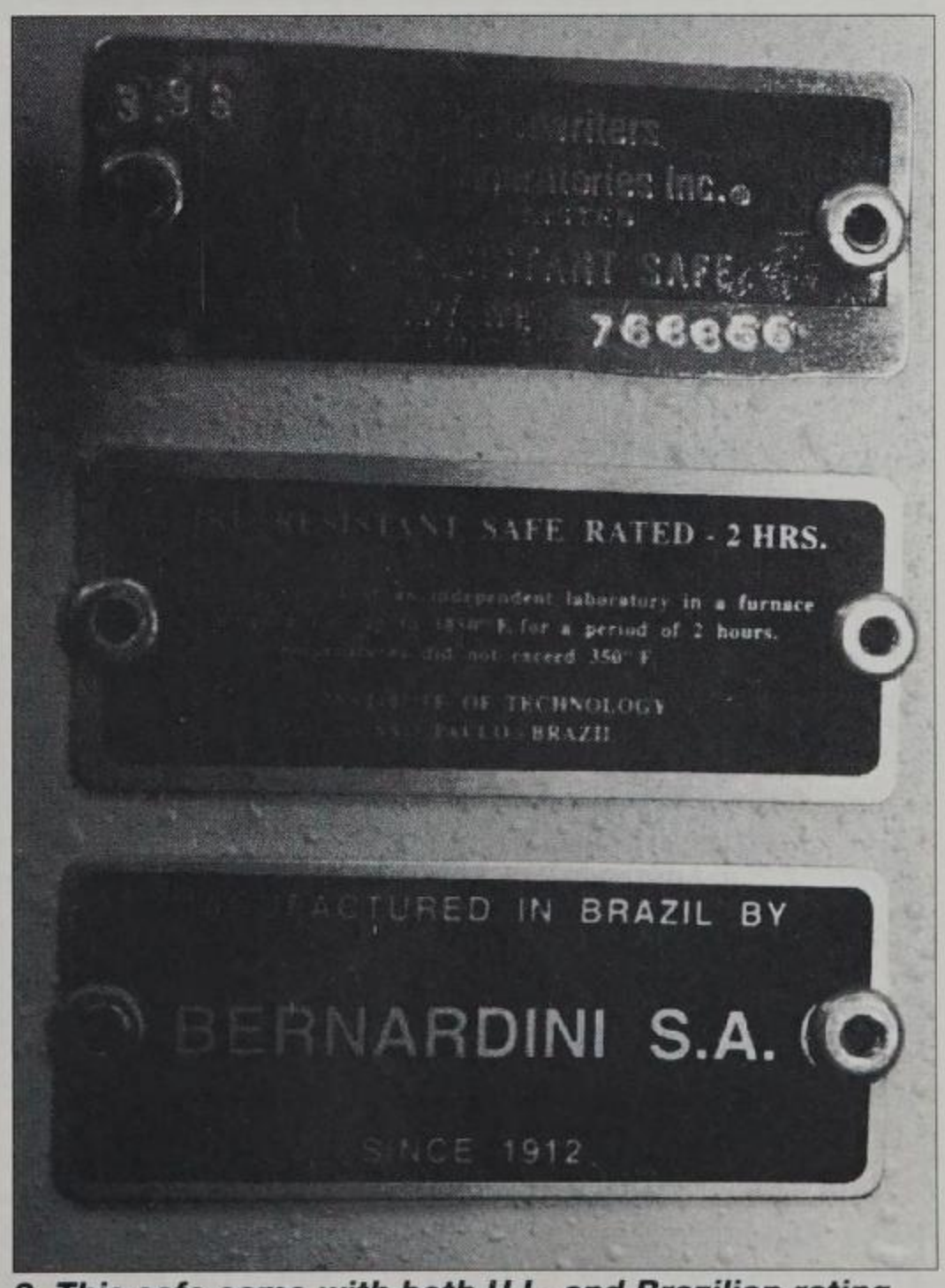
1. The Harwood Bernardini.

John Harwood has been around since the flood. In fact, he was a prime mover behind the flood – the flood of high-security safes into the United States, that is.

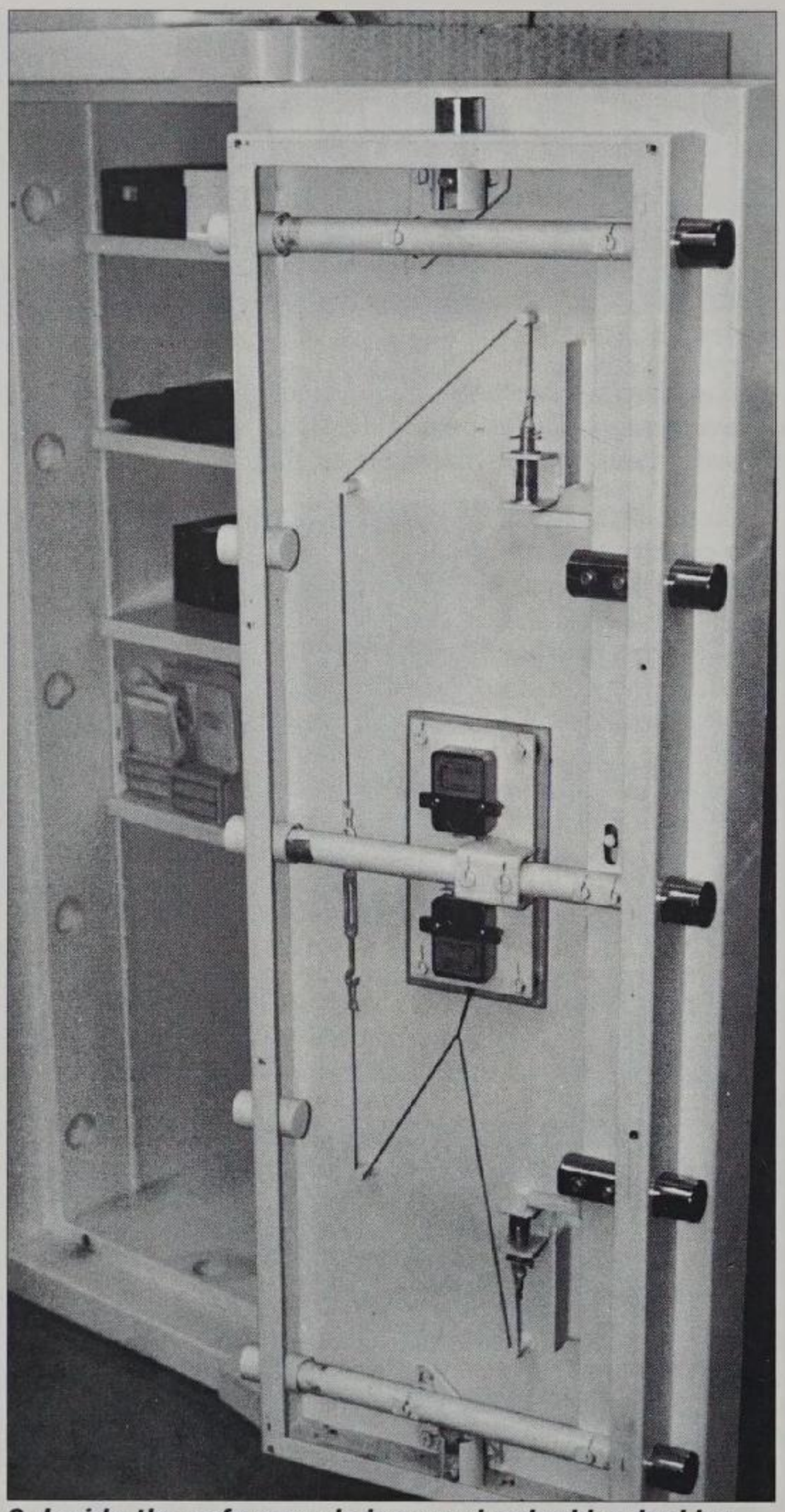
In the early 1980s, Harwood made a big splash by touring the country pushing English Tanns. Since then, his name has been associated with other names in high security, such as KASO, Bernardini, and National. This month we will look at a Bernardini that Harwood put his name on, shown in photograph one. Sporting dual comb-locks, a sleek tri-spoked handle, and a flag-clustered logo (very much like the one Eric Mueller uses on his International-labeled Bernardinis), this is a one good looking safe. I'm a sucker for multi-colored flags!

In photograph two we see the labels on the back panel. This safe carries a U.L. TL-30 label as well as a Brazilian 2-hour fire label.

Photograph three takes us inside for a peek at the boltwork. The 3-way boltwork boasts big, impressive-looking locking bolts, five on the opening side, and one each top and



2. This safe came with both U.L. and Brazilian rating labels.



3. Inside the safe reveals impressive-looking locking bolts.

bottom. In this photo, the boltwork is in the extended (locked) position.

In photograph four the boltwork is retracted (unlocked). Notice the two relockers coming off the bottom of the glass plate. The glass plate is between the large mounting plate that the comb-locks are attached to, and the bedplate of the door. If the glass is broken, the relockers fire. They do not crosslock. Personally, I have always thought of crosslocks as overkill, designed to make our job – not the burglars' – more difficult. Can anyone think of a single case in history where the difference between a safe burglar getting in or not getting in rested on the presence of crosslocking relockers? I rest my case.

Photograph five is a close-up of the area around the comb-locks. Both are LaGard 3330s, with the upper lock mounted VD and the lower lock mounted VU. Notice the large glass plate under the mounting plate, and the cable coming off the bottom of the glass plate. If the glass is broken, the cable releases both relockers. It is worth nothing that these are the only relockers in this door. There are no relockers attached to the back cover of either lock. We'll get to the significance of that later in the article. Also, notice the black lines drawn across each bolt that attaches the mounting plate to the door. These lines provide us with an at-a-glance way of noticing any bolts that are backing out.

Photograph six shows the upper relocker. When fired, it blocks travel of the little bar that has been welded onto the boltbar. If this little bar cannot retract, neither can the boltbar, and thus the safe remains locked. The cotter key sticking through the top of the relocker is for protection against the relocker firing while the safe is in-transit. Once the safe is delivered and installed, the cotter keys should be removed to give the customer full protection. It is amazing how many transit screws, pins, and cotter keys are not removed by people who deliver safes. In my experience, at least half the new safes I run across have relockers that cannot fire. To all riggers: wake up, dudes!

Okay, let's get down to the fun stuff – how to open this particular model of a Harwood Bernardini. As I see it, there are four good opening options, and several bad ones:

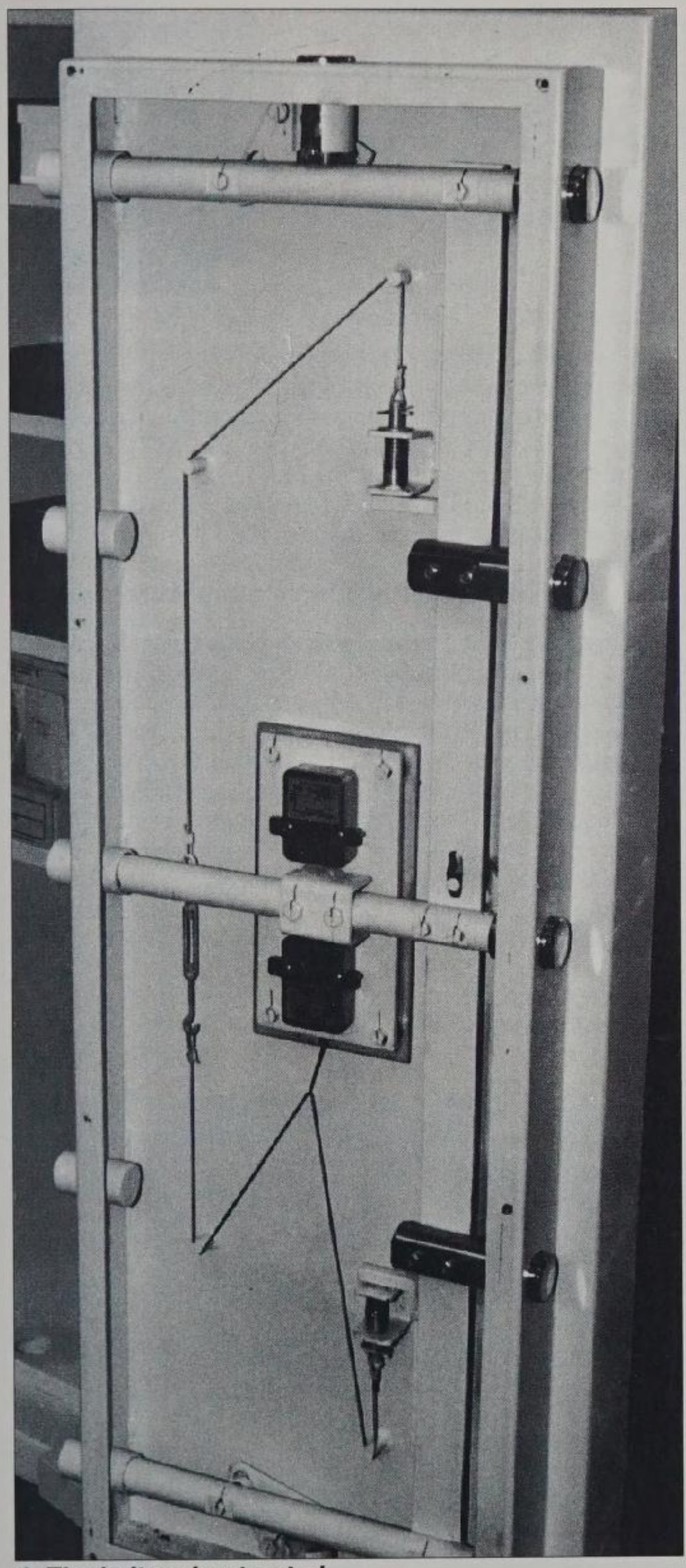
(1) The cleanest opening, causing the least damage, is achieved by side-drilling through the hinge side to read out the combinations through the change key holes. There is plenty of room to fit a borescope between the back of the locks and the back panel of the safe. This method requires two holes, one for each lock.

(2) Almost as clean is to drill through the hinge side of the safe, into the locks to read out the wheel gates and transfer to drop in. Remember, drop in on the top lock is 73; drop in on the bottom lock is 23. This method requires two holes, one for each lock.

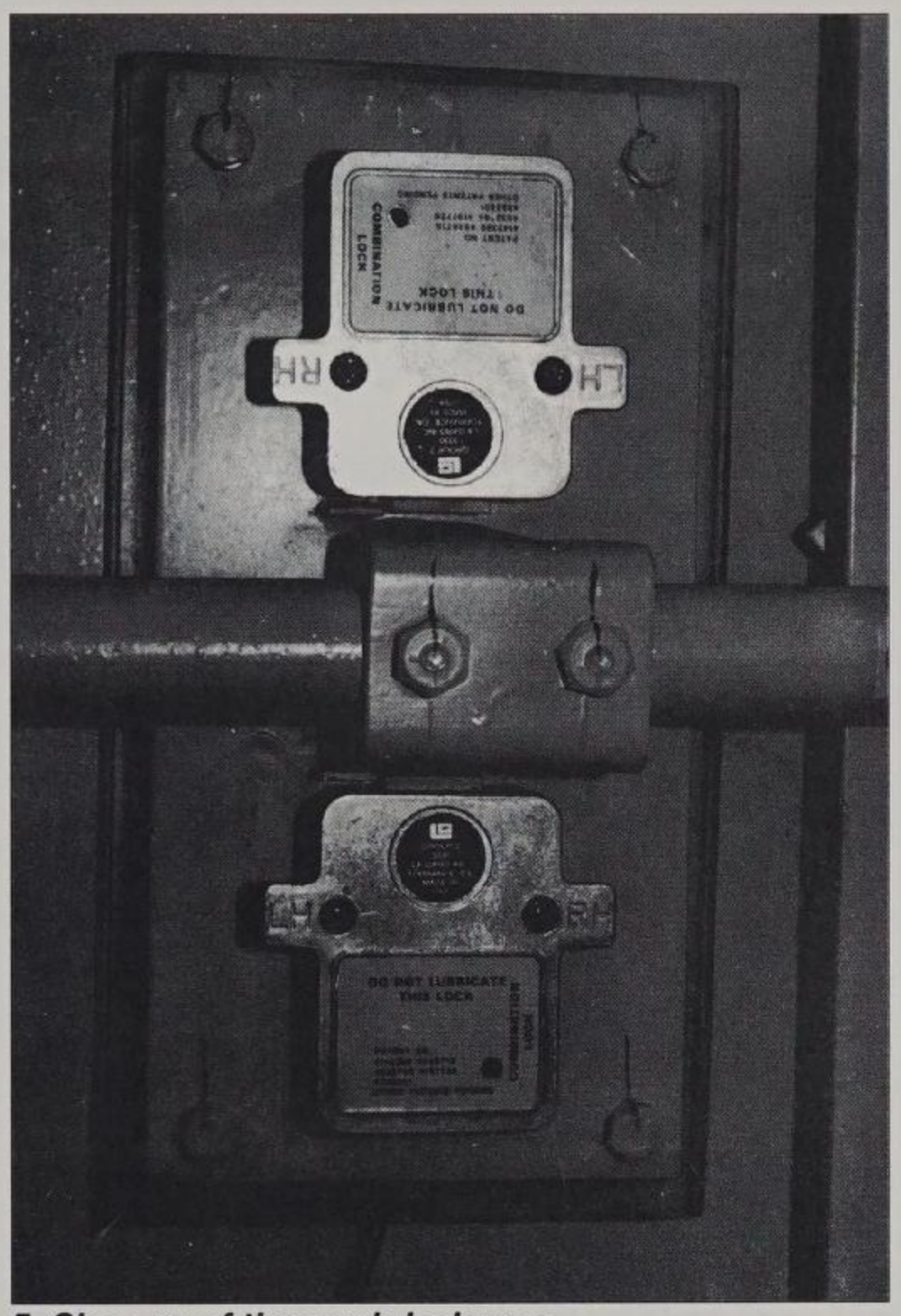
(3) In case of a severe malfunction, you might have to side-drill through the opening side for the top lock, and side-drill through the hinge side for the bottom lock. This will allow you to drill into each lock and punch the fence down into the wheel gates (or break it off). Then you can rotate the dial and open the lock.

(4) Since there are no relockers attached to the back covers of the locks, you can do what you wish to them! You can drill away the spindles to open the locks through the spindle holes. (Punching the spindles is an option, but it requires a lot of space between the locks and the back panel of the safe to accommodate the spindle. Otherwise, the spindle – with driver attached to it – will bang and bang and bang against the back panel, but will not have enough space for the spindle to drop into the safe.) The bad, unprofessional options, involve drilling through the door for drop-in on each lock, breaking the glass, and then drilling for the relockers. Messy and yechhy – no thanks.

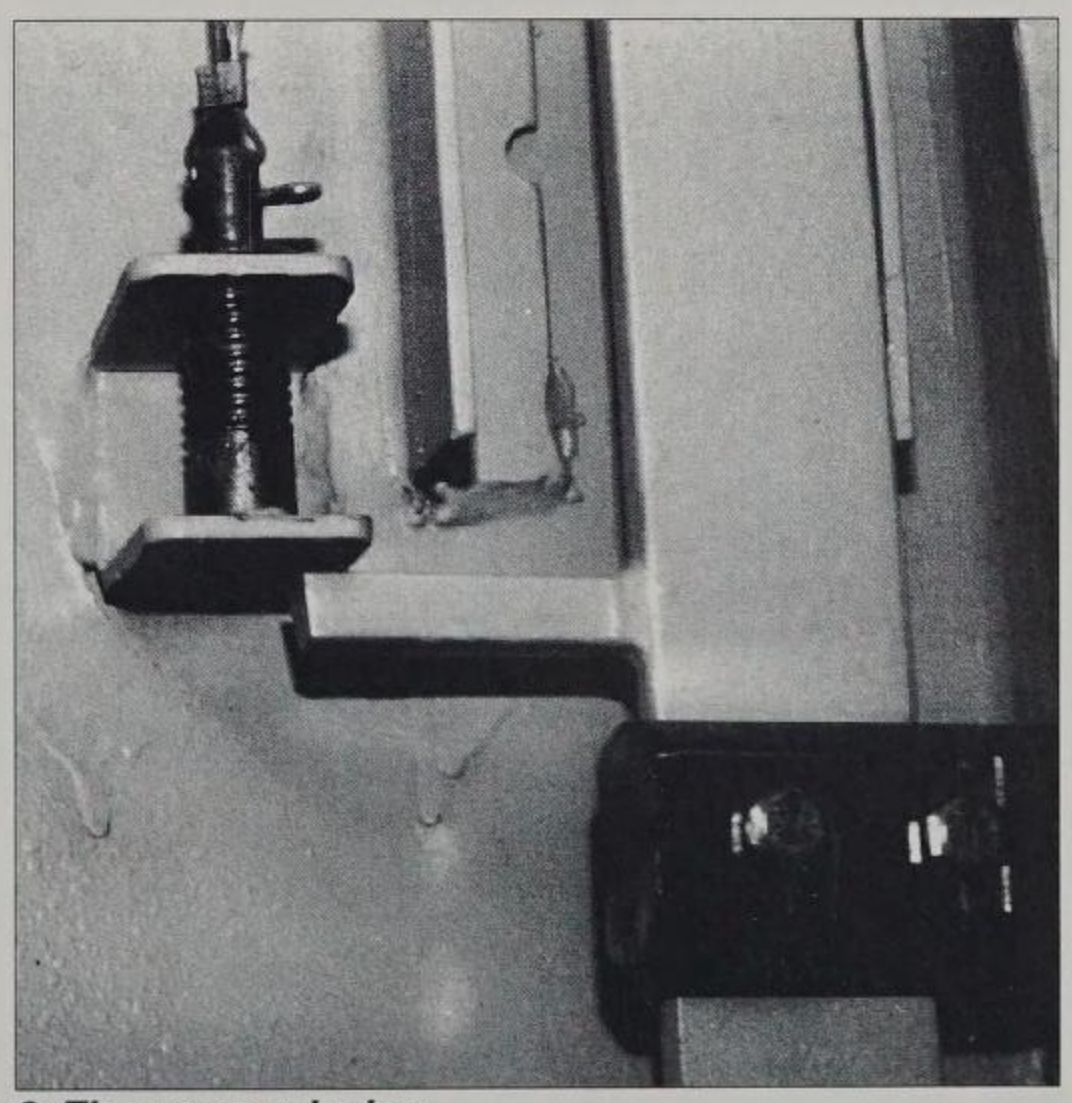
Well, that about wraps up our mini-tour of one of the many different safes to bear the Harwood name. I hope you enjoyed it. See ya next month.



4. The boltwork retracted.



5. Close up of the comb-lock area.



6. The upper relocker.

by Dave McOmie

WHOSE SAFE FROM SOUTH KOREA?

This safe from South Korea is really a piece of art. I've seen better things from High School Metal Shop.

First things first. A few months back, in the two-part article on opening a Lips safe, I asked if anybody knew anything about the winged creature that appears on the Lips logo. (See *The National Locksmith*, August 1994, page 8, photograph 2.) Much to my surprise, not one but two responses popped up in my mailbox. Jerome Andrews and Bob Boddy were both familiar enough with this beast to know where to look for more information. And both gentlemen were kind enough to send along the info.

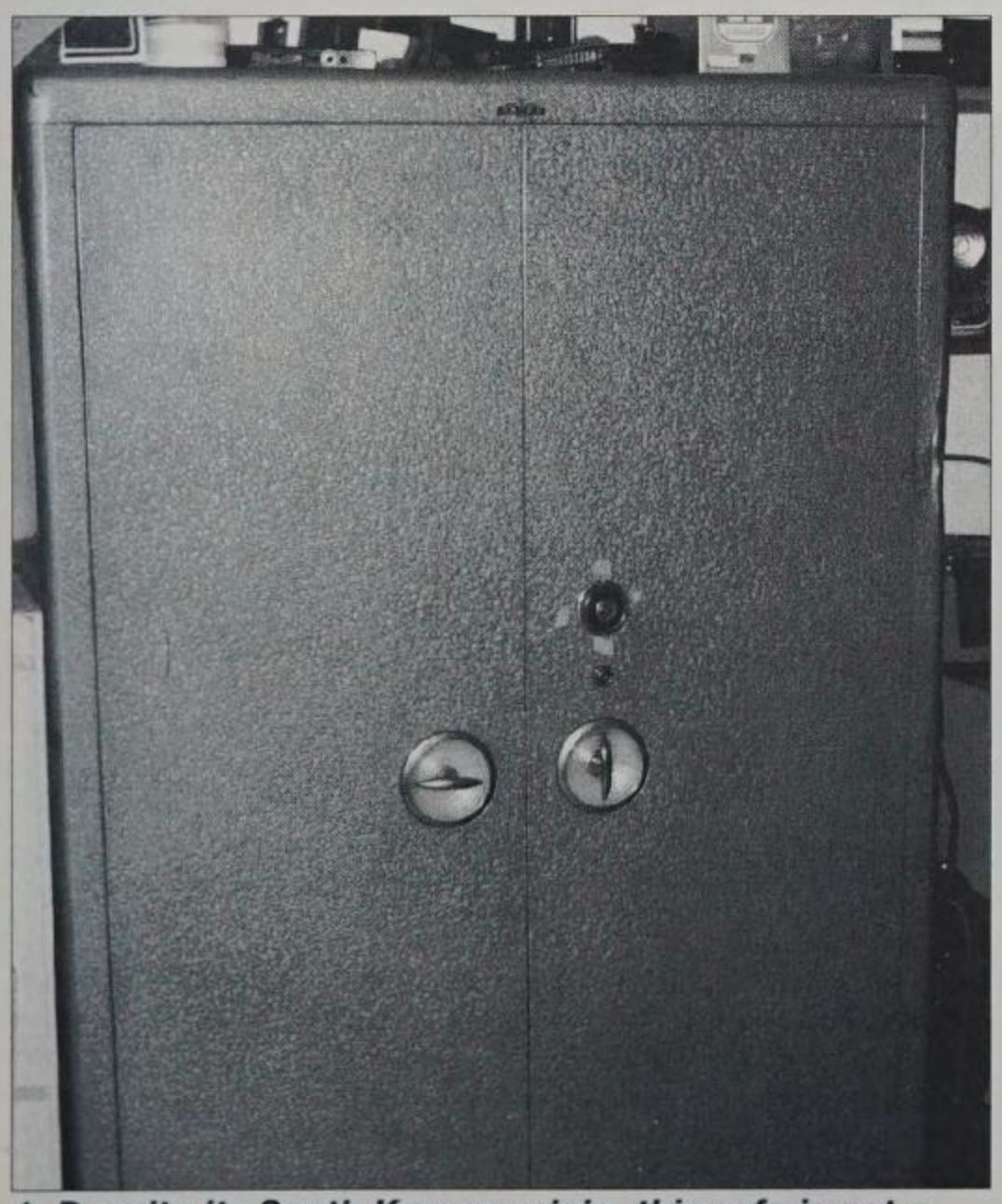
According to Time/Life, the creature in the photograph is "a huge winged bull with the head of an ornately bearded man that guarded a gate of the great palace built about 710 BC by Assyria's King Sargon II. Almost thirteen feet tall and weighing close to sixteen tons, the stone figure revealed the skill of Assyrian sculptors – who gave it five legs so that it would appear balanced, whether viewed full-face or in profile. Such mythical creatures, thought to give magical protection against evil spirits, stood at the main portals of all Assyrian palaces." Thanks to Jerome, Bob, and Time/Life for the enlightenment. Now we know. . . the rest of the story.

This months story takes us from ancient Assyria to modern-day South Korea, from fear of evil spirits to fear of nuclear neighbors.

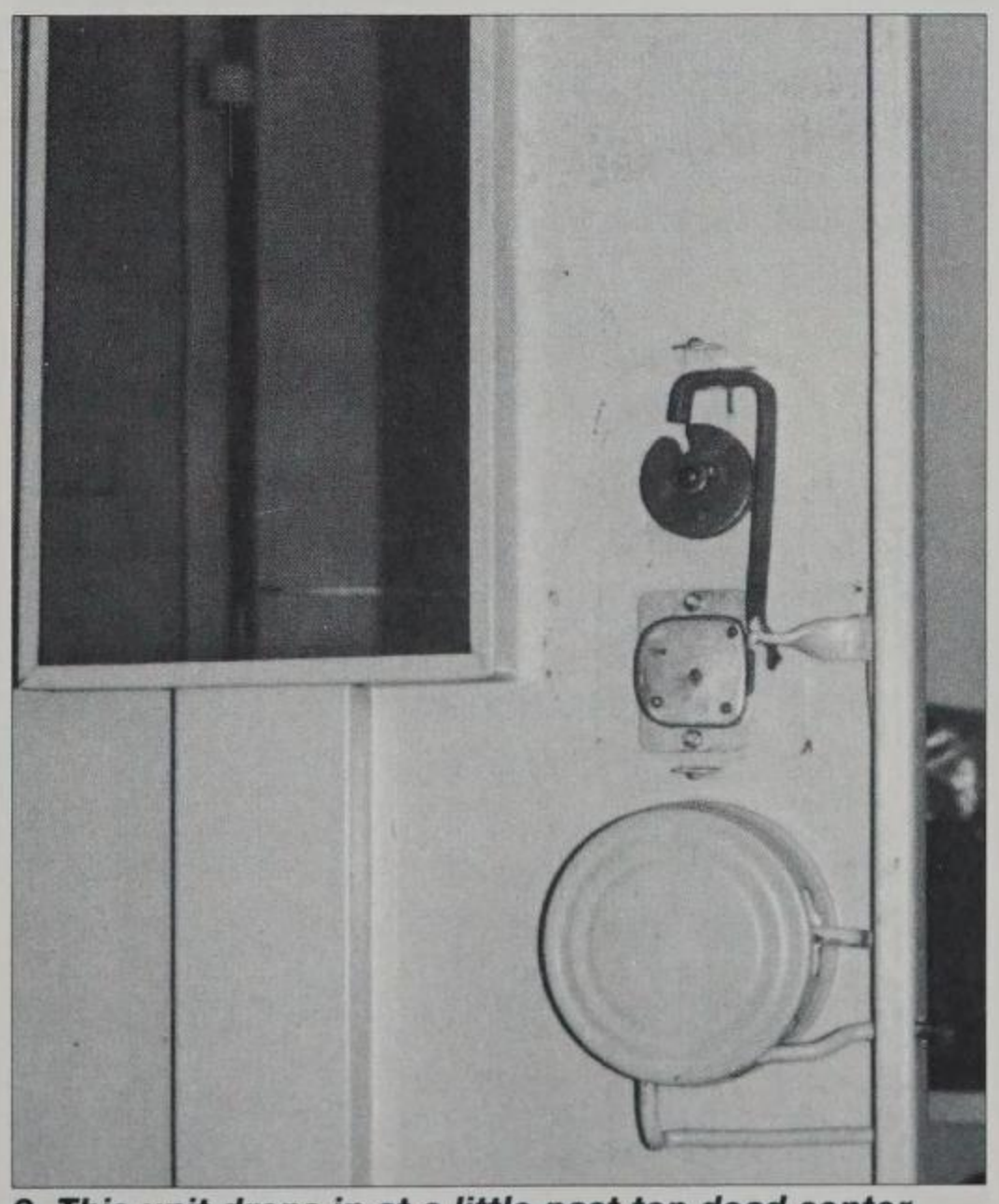
When the photographs that are the subjects of this month's article arrived from Carson's Lock and Safe, of Port Townsend, Washington, and when I found out that the safes were manufactured in South Korea, my first reaction was that they must have come from the Bumil factory. After all, when one thinks of South Korea and safes, the first name that comes to mind is Bumil Safe Mfg. Co., since they have private-labeled more safes than any other manufacturer in history. No kidding. You will find Bumil safes with labels by Adesco, Ambassador, Amsec, Major, McGunn, Pacific Security Products, Safeguard and many others too numerous to mention.

But I was wrong. Neither the safe shown in photograph one nor its inner chest was made by Bumil. So who made it? I don't know, but for a few minutes let's forget about names and talk about safes. Notice the chintzy little handles and the concealed hinges. Those are probably the best identification tips.

Photograph two takes us inside the big double-door fire safe. Shades of Mickey Mouse and the Garage Factory! I have seen better things from High School Metal Shop. This "safe" uses a kind of straight-tailpiece lock that drops in a

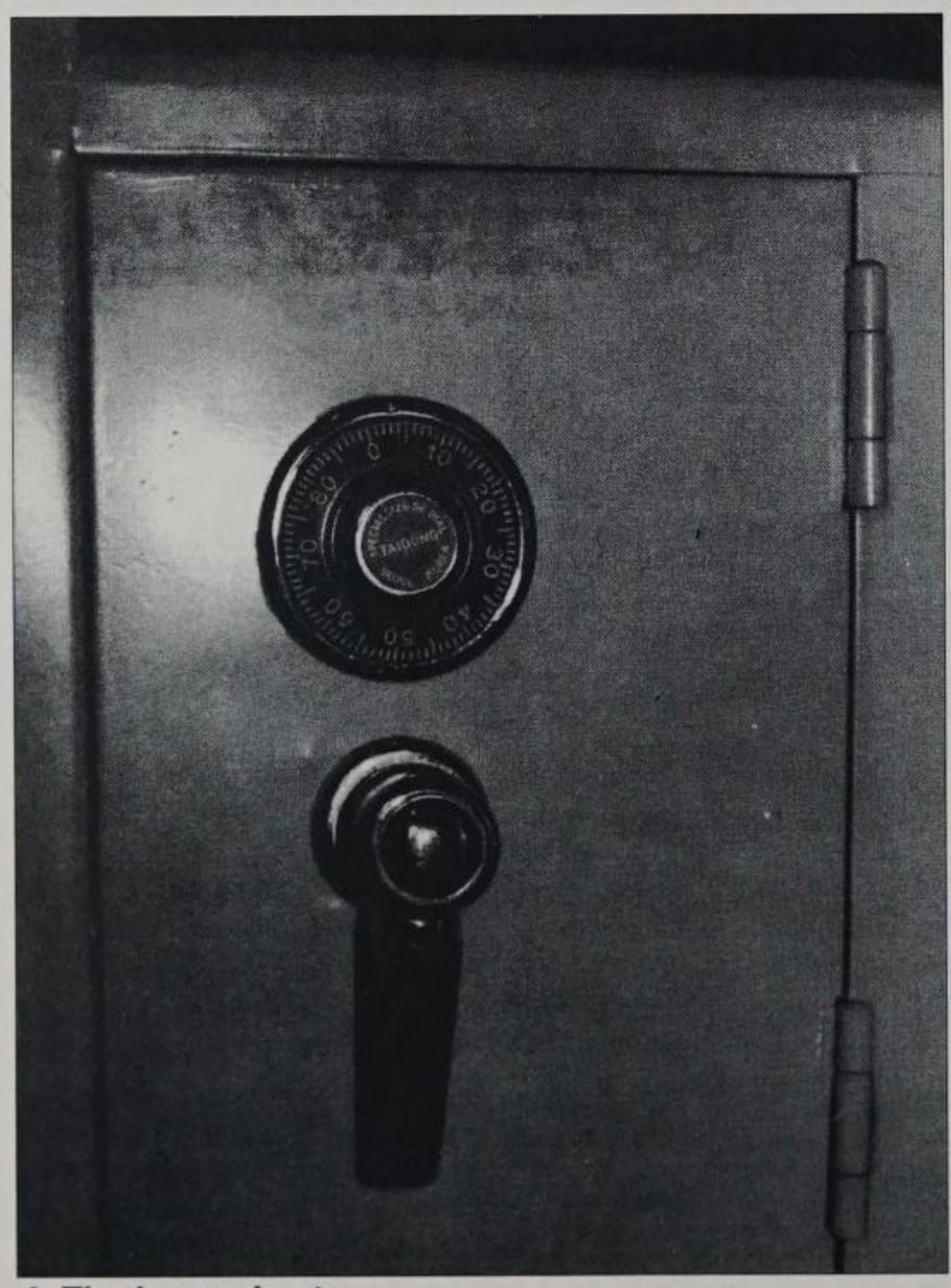


1. Despite its South Korean origin, this safe is not a Bumil.



2. This unit drops in at a little past top dead center.

3. A look at this work of art.



4. The inner chest.

little past top dead center, rather than at 9 o'clock like most straight-tailpiece locks. Let's move in for a close up.

Photograph three takes us in for a close up of this. . . work of art. Hey, if a painting of dogs playing poker is art, then so is this safe (assuming we can call it a safe.) In this photo, the wheels are aligned with the tailpiece and the keylock is unlocked. The handle may now be thrown to retract the boltwork. We'll talk about opening techniques, but first let's look at the inner chest.

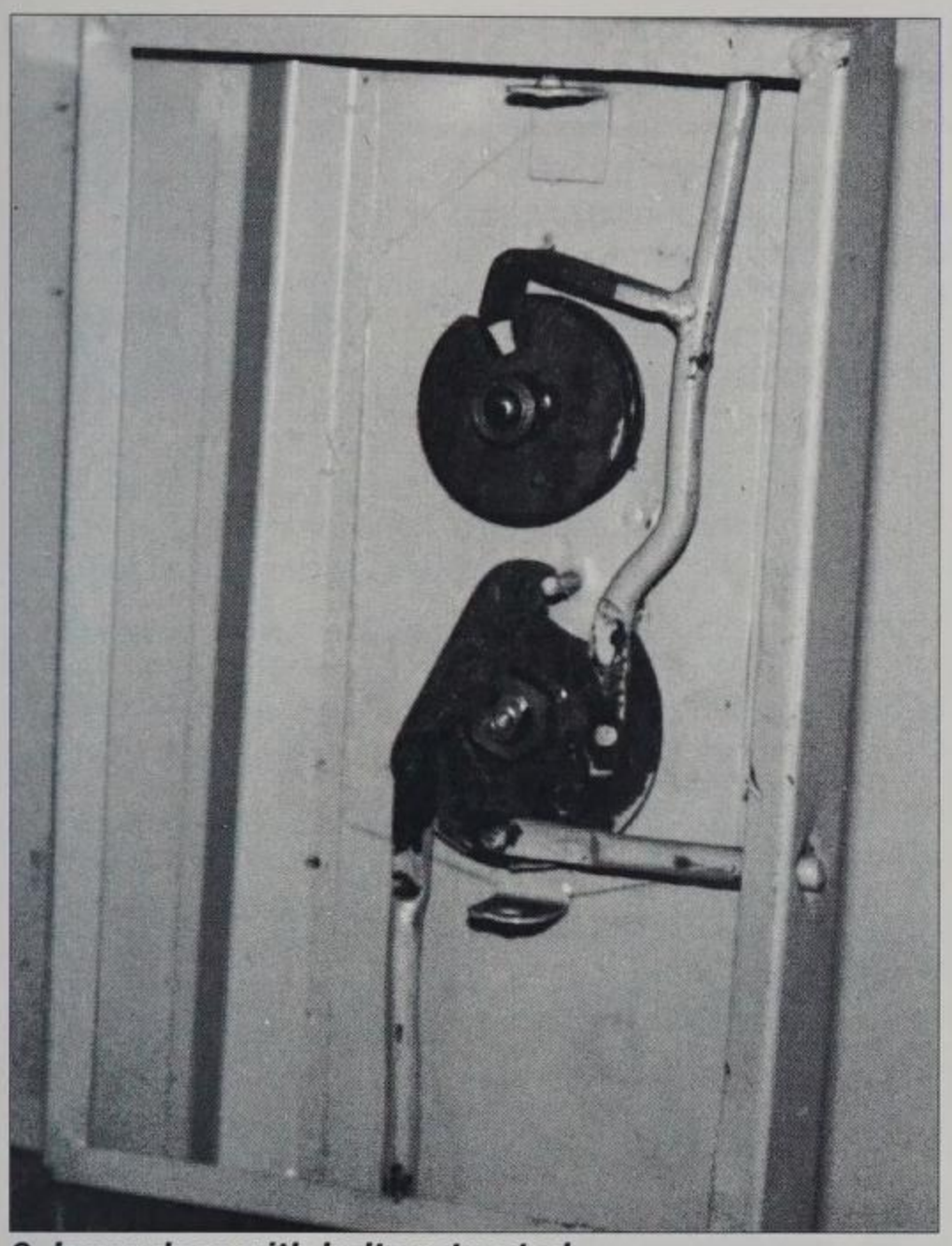
Photograph four shows the inner chest, which, in all fairness, is an aesthetically pleasing little guy, sporting a red-orange dial and matching handle. The bantamweight hinges give it away as not a serious security contender.

Photograph five gives us a bad case of déjà vu, as the basic lock design is identical to the outer door minus the keylock. In this photo the boltwork is in the extended position. Notice how far above the wheels the tailpiece is. We'll come back to this point with the next photo.

In photograph six, the boltwork has been retracted. Notice that the tailpiece has to just barely enter the wheel gates for the boltwork to retract sufficiently for the door to open. If we combine that fact with the previous fact about the tailpiece being way off the wheels at full extension, we come to the conclusion that there is a tremendous amount of slop in the boltwork, perhaps even enough to force this door open just by playing with the handle and dial.

Opening these safes is a dream. Since I haven't actually opened one yet, a dream is all it can be. But in reality, it will be a dreamy experience. In the case of a lost combination, there are two excellent opening options:

5. The inner door bolt work is similar to the outer door.



6. Inner door with bolts retracted.

(1) Manipulation. I hate to disappoint those who have come to rely on me to make jokes about manip-mania, but this straight-tailpiece lock with no false gates around the wheels just *screams* to be manipulated. El piece of cako, and no relocko.

(2) Drill. Straight in from just outside the dial ring at 10 for a splendid scope hole which will enable you to line up the wheel gates directly under the tailpiece. No transferring necessary. Yes!

In case of a malfunction or burglary, where wheel transmission is lost, you have two good choices:

(1) Drill right at drop-in to probe the wheel gates around under the tailpiece.

(2) Drill for the wheels and knock them into the safe. This ought to be a last resort, since it will likely damage the lock parts beyond repair.

The first guy to drill open one of these safes is hereby begged, besieged, importuned, implored, cajoled, heck, *commanded* to write and tell us about his/her experience. The McOmie book of choice is offered to the first complete account that includes publishable photos. Go to it, and I'll see y'all next month.

I am still waiting to give away a book to the first guy (or gal) to come through with photos of drilling one of these safes. Well, any takers?

by Dave Mc Omie

NORM & BILL'S EXCELLENT ADVENTURE

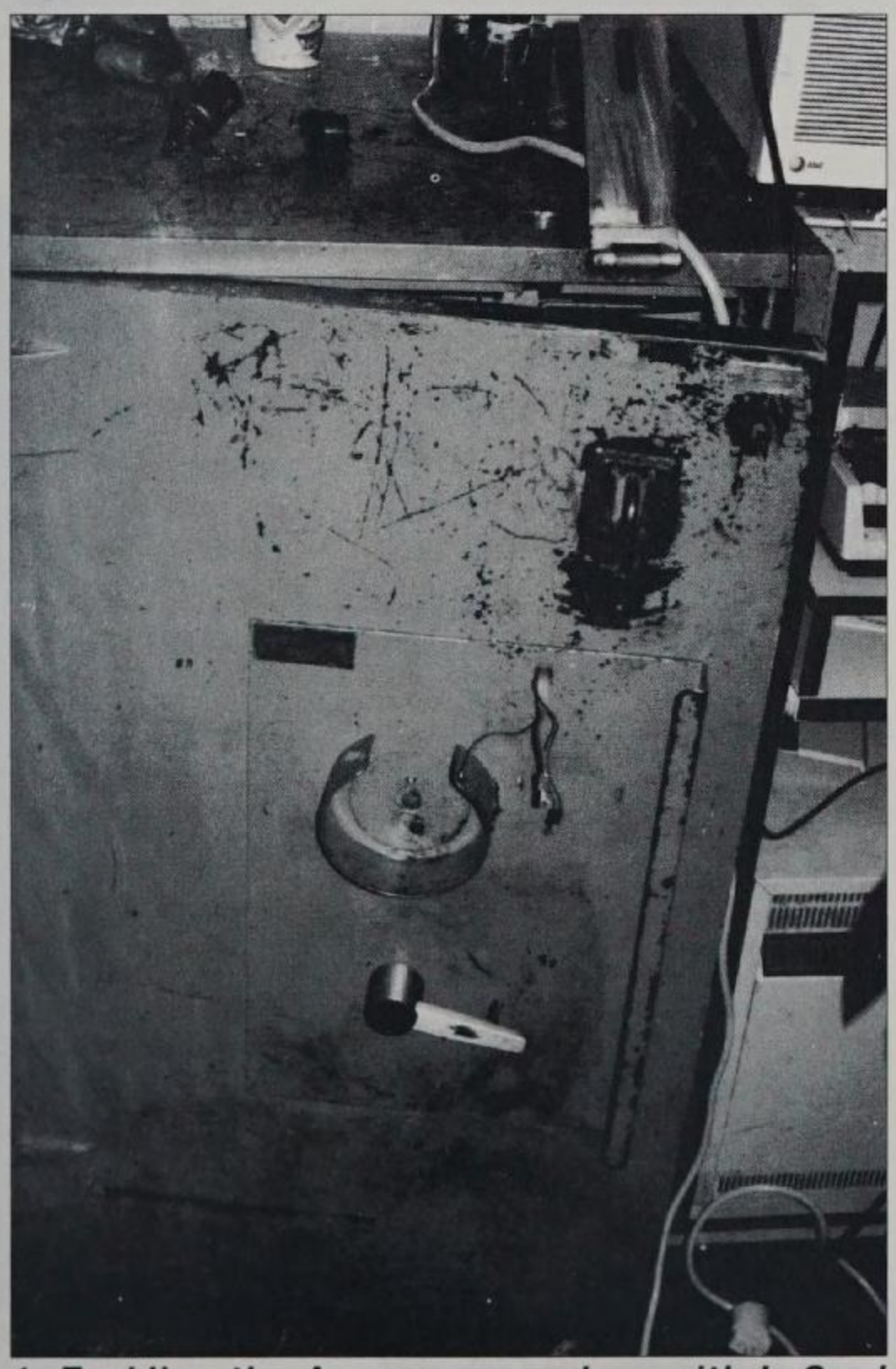
The aftermath of a handyman's exploits into an Armor safe and LaGard lock lead Norm Schamp and Bill Cary into one unforgettable adventure . . .

A lockout on an electronic safe lock can be real. It can be nice. But sometimes it ain't real nice. Sometimes it is a real nightmare. Just ask Norm Schamp and Bill Cary.

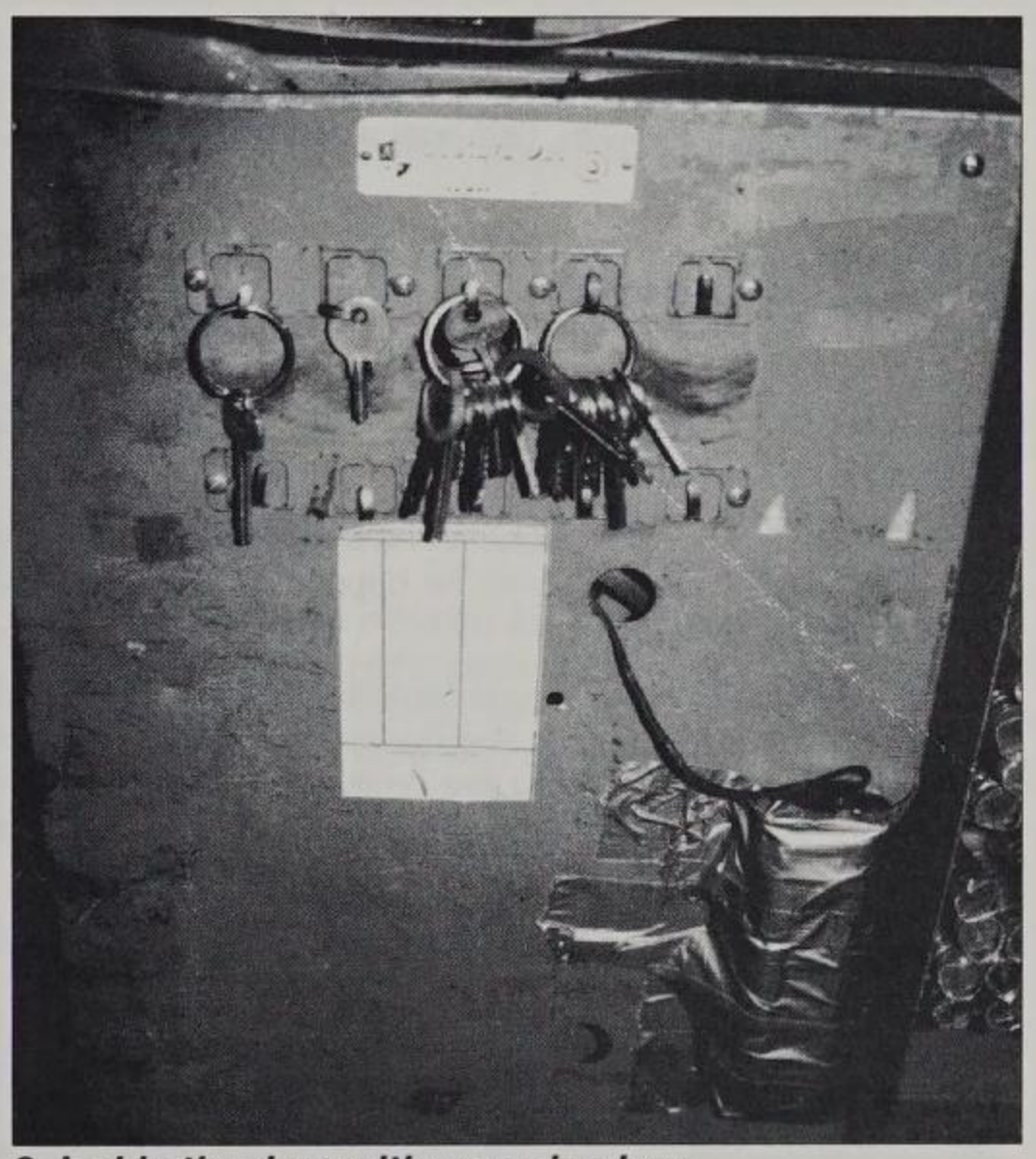
Recently, Norm and Bill tackled a lockout on an Armor square door in a fast food restaurant. *(See photograph 1.)* The LaGard electronic lock had apparently malfunctioned, or so claimed the last employee to have played with the safe.

Troubleshooting didn't accomplish anything but to assure Norm that it was drill time. On a LaGard Swingbolt, deducing a drill point is a bit tricky, since you have to know not only which way the lock is mounted, but which way the lockbolt swings. Well, Norm did his homework, center-punched his drill point and turned loose his drill rig.

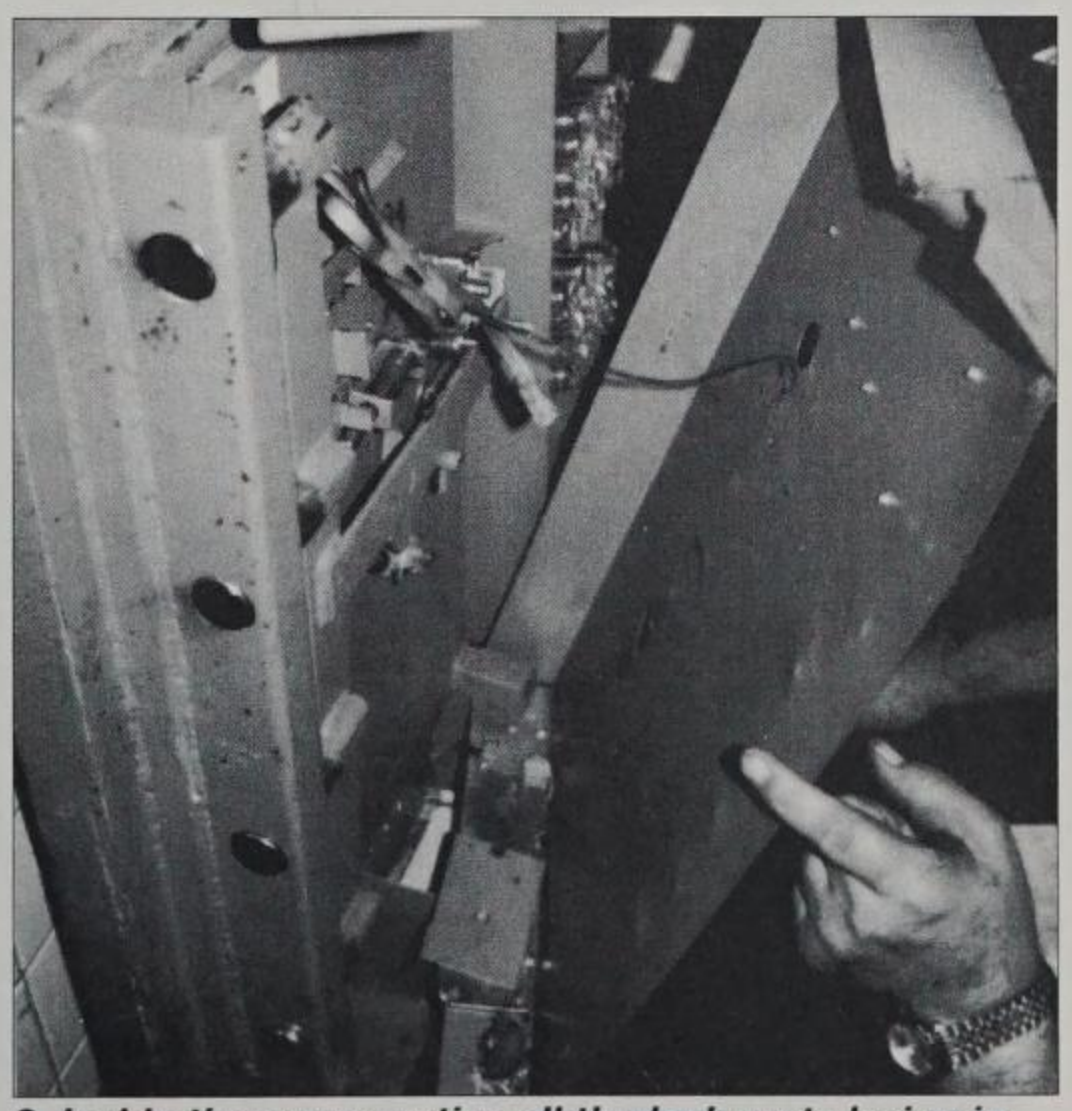
Zip! Norm was down to the hardplate at the speed of Bosch. And then he hit the Prince of Darkness: a carbide



1. Tackling the Armor square door with LaGard electronic lock.



2. Inside the door with cover in place.



3. Inside the cover, notice all the lock parts laying in the bottom.

included hardplate. Not just your run of the mill carbide-included plate. No sir. This one, in Norm's words was, well, uh, er, golly, we can't repeat Norm's words in this family magazine without violating its PG rating. But you get the point.

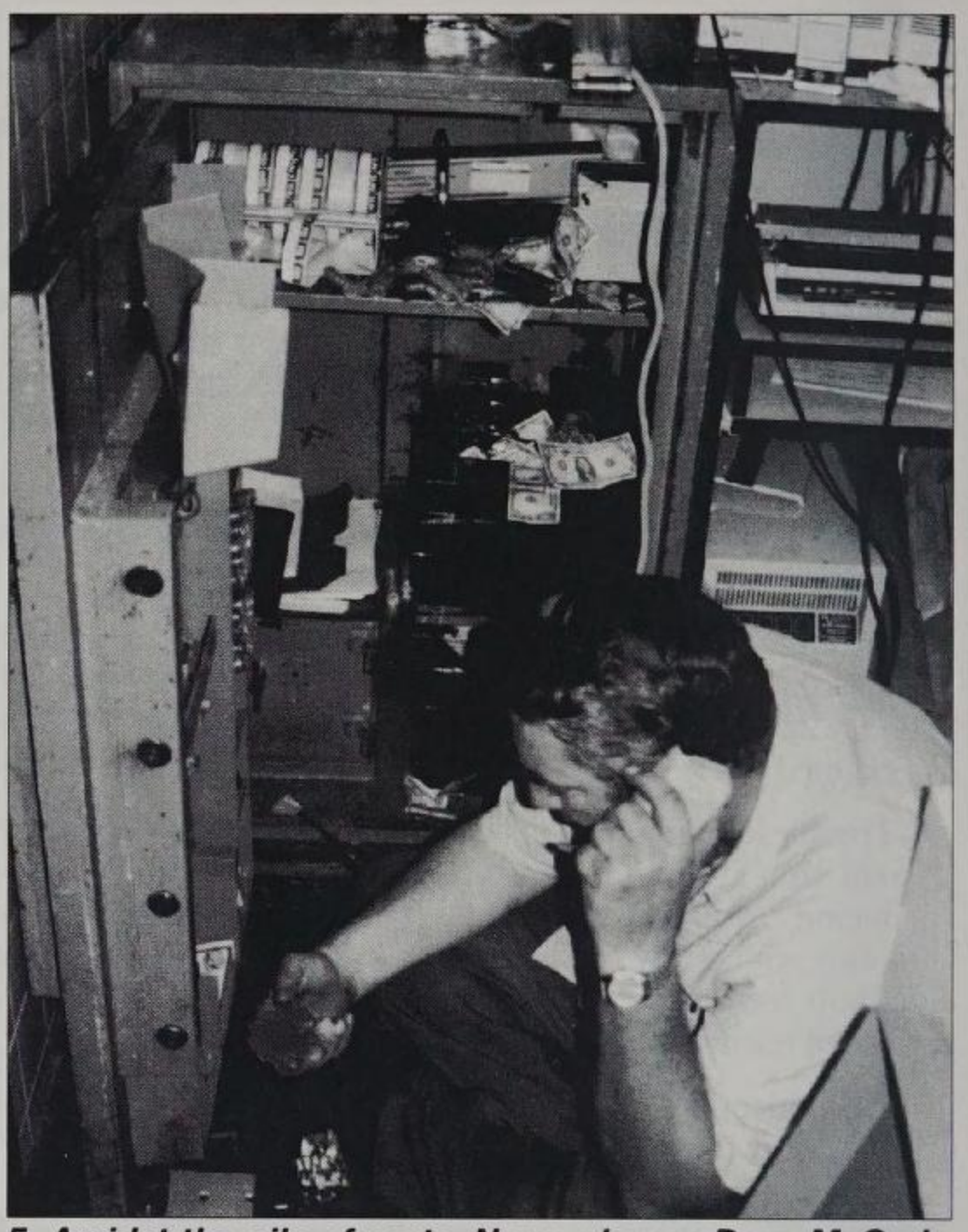
A few dozen silver bits and blue words later, the hole broke through to the inside. Whew, Norm was relieved. He peeked in the hole to verify that he was right on the solenoid piston. He saw absolutely nothing. PG violation. PG violation. An airhole? Huh?

Whoa. Time Out. Stop right there. Norm started to think he was having an out-of-body experience, right here in the middle of Burger Heaven. This was absolutely impossible. Or was it?

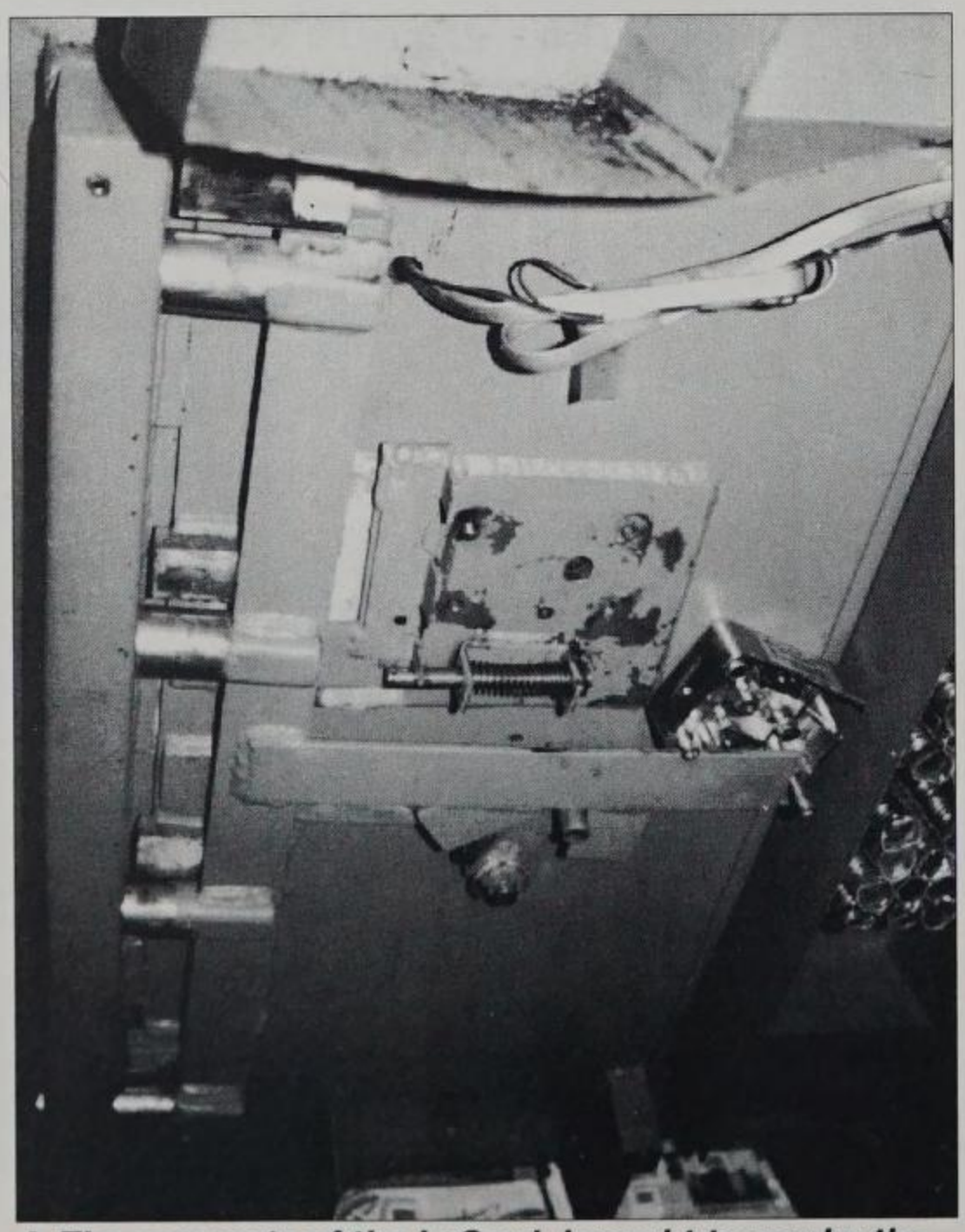
We all know that electronic safe locks do not use spindles. They use wires. This means that the lock does not have to be installed in line with the keypad. Heck no. The keypad and lock can be located in separate cities, so long as the cable is long enough. And before long, somebody will probably come up with a wireless lock.

So Norm grabbed his phone and called Bill Cary. The job sounded interesting to Bill, so he hopped in his truck and headed over to the jobsite.

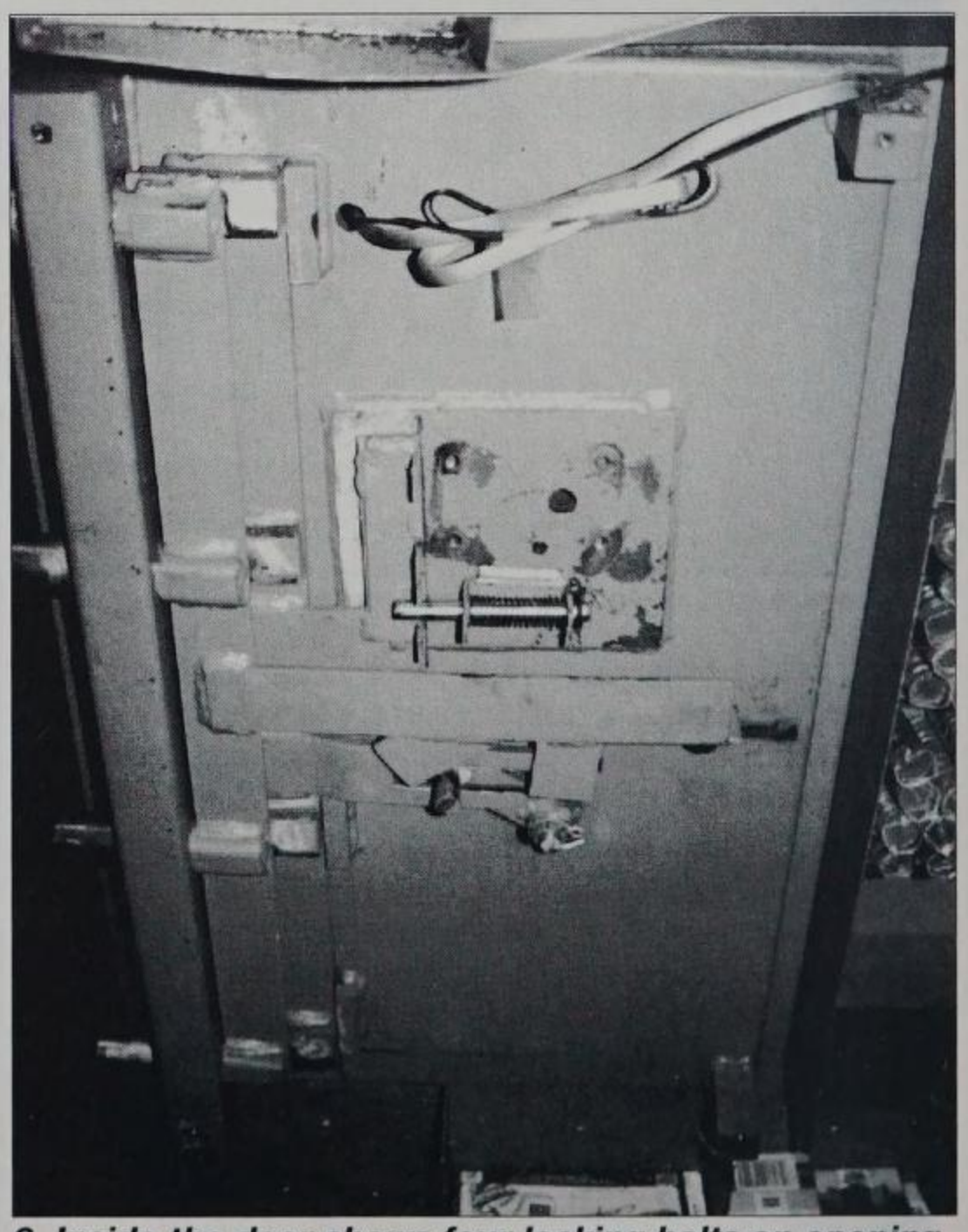
Bill and Norm started to wonder if this lock was mounted in some remote location of the door. Then they began to carefully scope the inside of the door. They could see the part of the boltbar that the lockbolt normally blocks. This



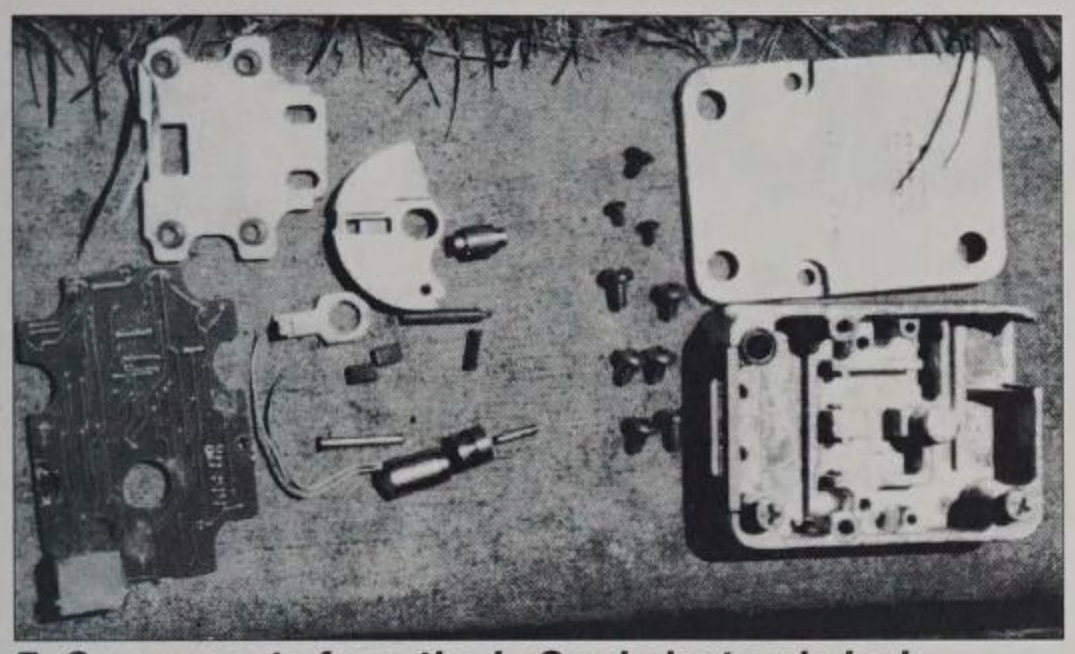
5. Amidst the pile of parts, Norm phones Dave McOmie with their most excellent adventure.



4. The remnants of the LaGard, brought to you by the local handyman.



6. Inside the door shows four locking bolts on opening side and an extended relocker.



7. Components from the LaGard electronic lock.

meant that Norm's hole should have been inside the lock. And then they realized: the lock had either fallen off the door or been removed. What was locking this safe wasn't the lock, but the external relocker!

Norm's eyes flared and he set his jaw. He wasn't about to drill another hole through The Prince. So Bill and Norm pondered the alternatives. The hinge side of the safe was up against a wall, so forget drilling through that side. The opening side was up against a counter loaded with office equipment, so forget drilling through that side. And the office was tiny, so forget about moving the safe away from the wall. Side-drilling was definitely not an attractive option.

So they pierced this Armor through the top and fought the external relocker back with long probes. Finally, the door swung open. Yabadabadoo!

Photograph two shows the inside of the door with the back panel still attached.

In photograph three Norm is pulling the back panel away. You can see all kind of Swingbolt parts laying in the bottom of the panel. Hmmm. How did those parts get there?

Photograph four shows where the lock was. It had been removed by the handyman employee who wouldn't fess up. If he had fessed up ahead of time, he could have saved Norm a lot of pain and the burger joint a few (well, more than a few!) bucks.

In photograph five, Norm is on the phone, telling me about Norm and Bill's Excellent Adventure. I beg for photos, so Bill goes out and gets the camera and starts clicking away.

Photograph six shows the inside of the door. There are four locking bolts on the opening side. The relocker is in the extended position.

Photograph seven shows all the parts to the lock. This handyman knew how to take things apart, but he suffered from the Humpty Dumpty Syndrome: he couldn't get them back together again.

Thanks to Norm Schamp for the interesting call, and to Bill Cary for the first-rate photographs. And thanks to Norm and Bill for the excellent adventure. Hey guys, did you squeeze 'em for an Extra Value Meal? Or, better yet, did you spill hot coffee in your lap? Yuk yuk. See ya next month.

DIEBOLD *vs.* RICHARDSON

Innovation and exceptions.

This month I would like to share with you two things: an innovative way to save a badly burglarized safe, and an exception to the McOmie Method of opening Diebold jewelers chests. Both the innovation and the exception come from recent experiences by L.A.'s most beloved safecracker/magician/bounty hunter, Dave Richardson.

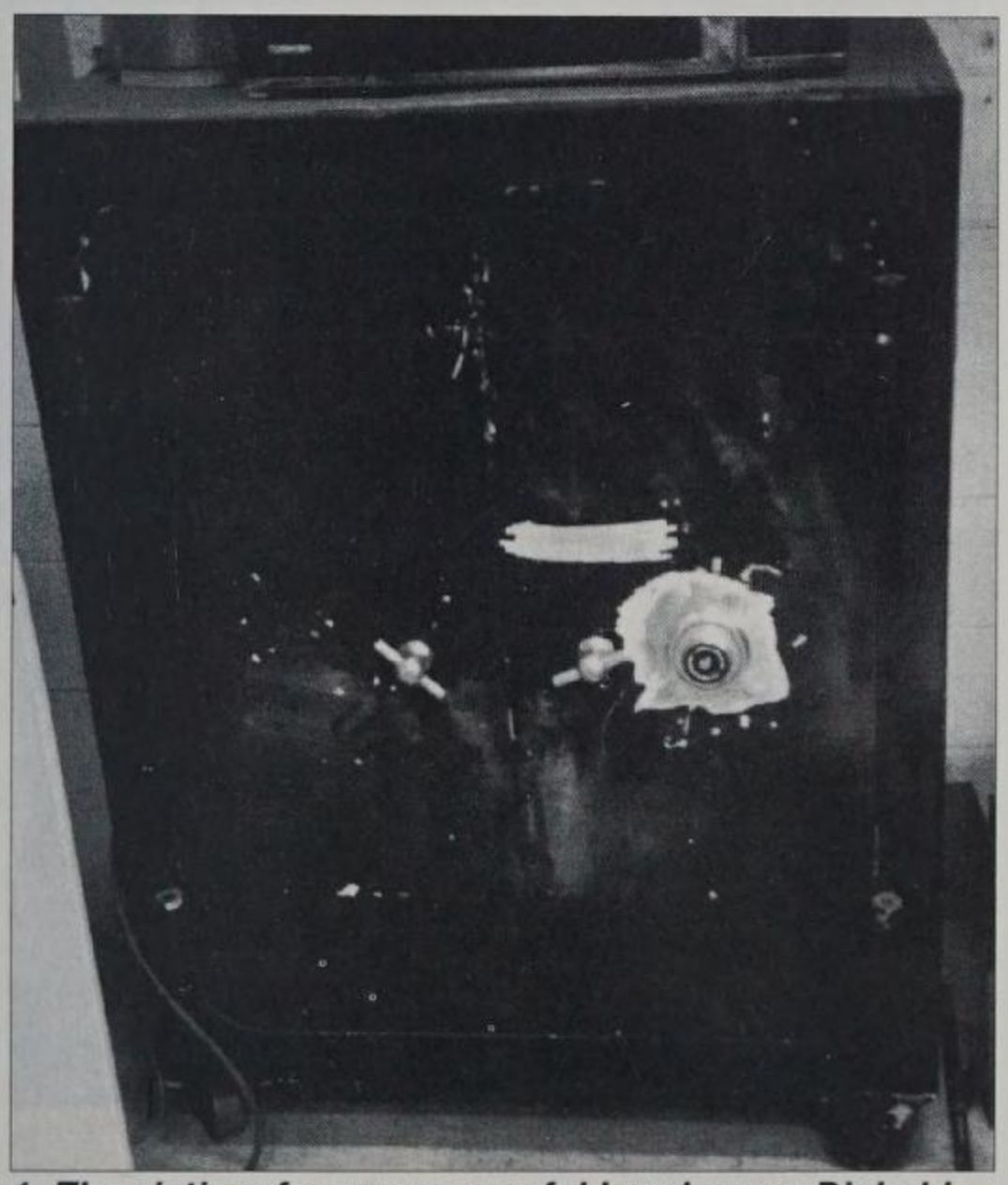
The Innovation

Photo one shows an old Diebold double-door cast iron fire safe that burglars attacked viciously but failed to open. Dave came out and finished the job, but the lock was a goner. What to do?

Photograph two, with the shiny new Sargent & Greenleaf dial gives us a hint. Hmmm. What hath David doneth?

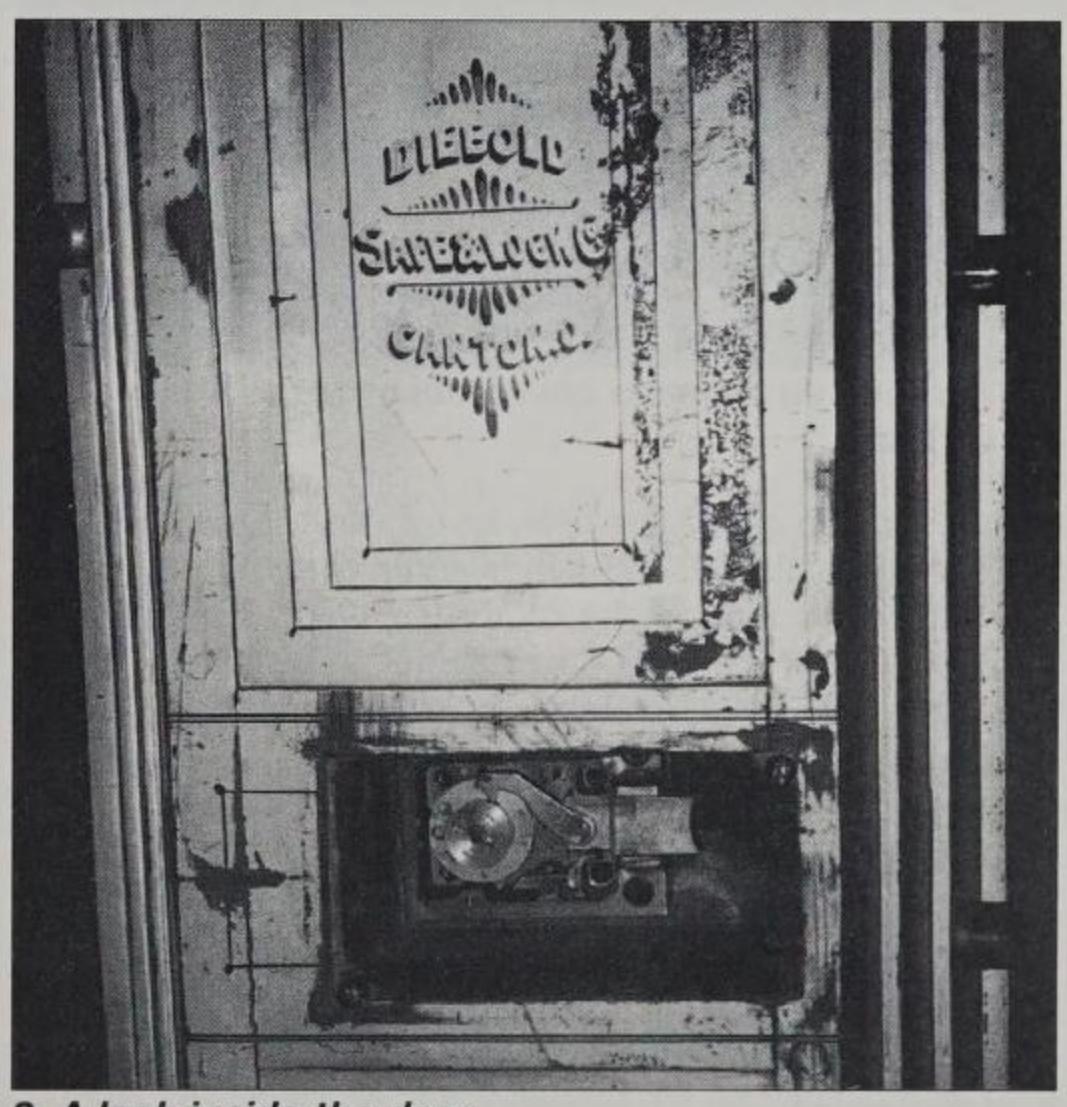
Photograph three gives us a look at the inside of the door. What is that? A Sargent & Greenleaf lock? How in the heck could he have done that? The original lock is much bigger and certainly does not have the same footprint as a 6730. Let's zoom in, take the lock off, and see what Dave did.

Photograph four shows us the secret of Dave's success: a custom-made mounting plate. Using Ed Willis' fantastic drawing of the original lock, Dave took measurements for the three (that's right, three, not four) mounting screw holes. Then he went out and fabricated a plate with holes in just the right locations to bolt onto the door. Dave drilled and tapped four 1/4" x 20 holes for the replacement lock, added a spindle hole, and as a nice touch, put on top and bottom guides for the extended lockbolt. Oh, and I almost

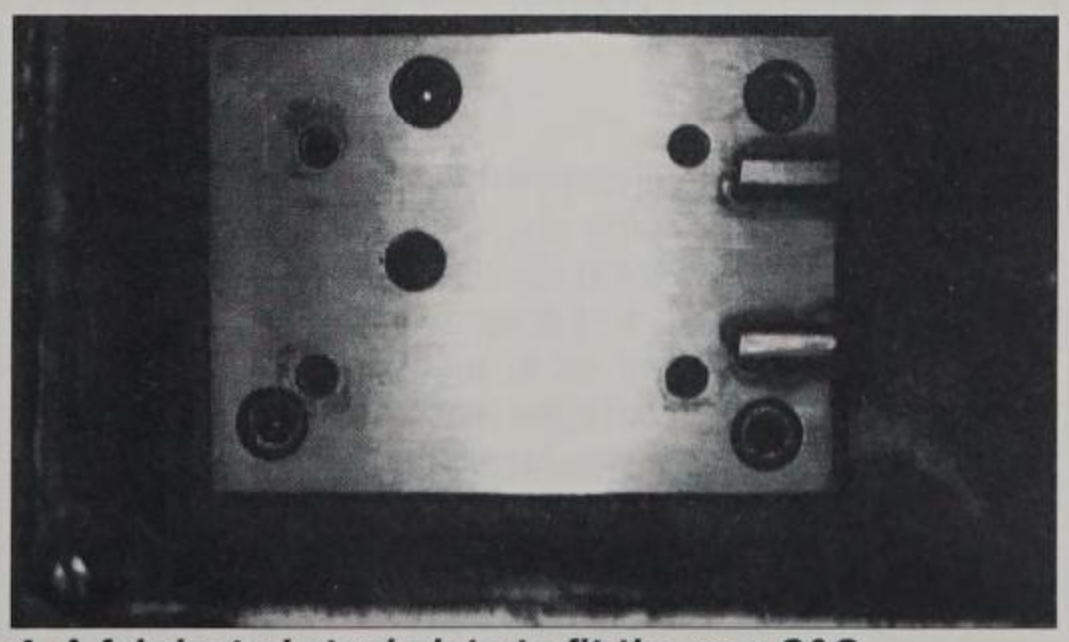


1. The victim of an unsuccessful burglary - a Diebold double-door cast iron fire safe.

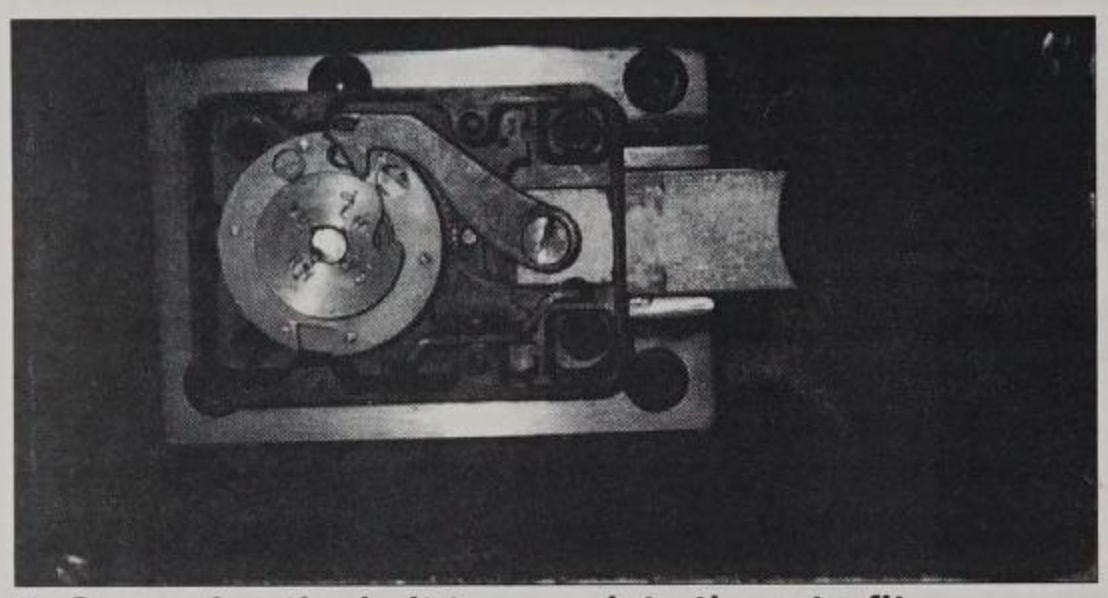
2. The safe with a new S&G lock.



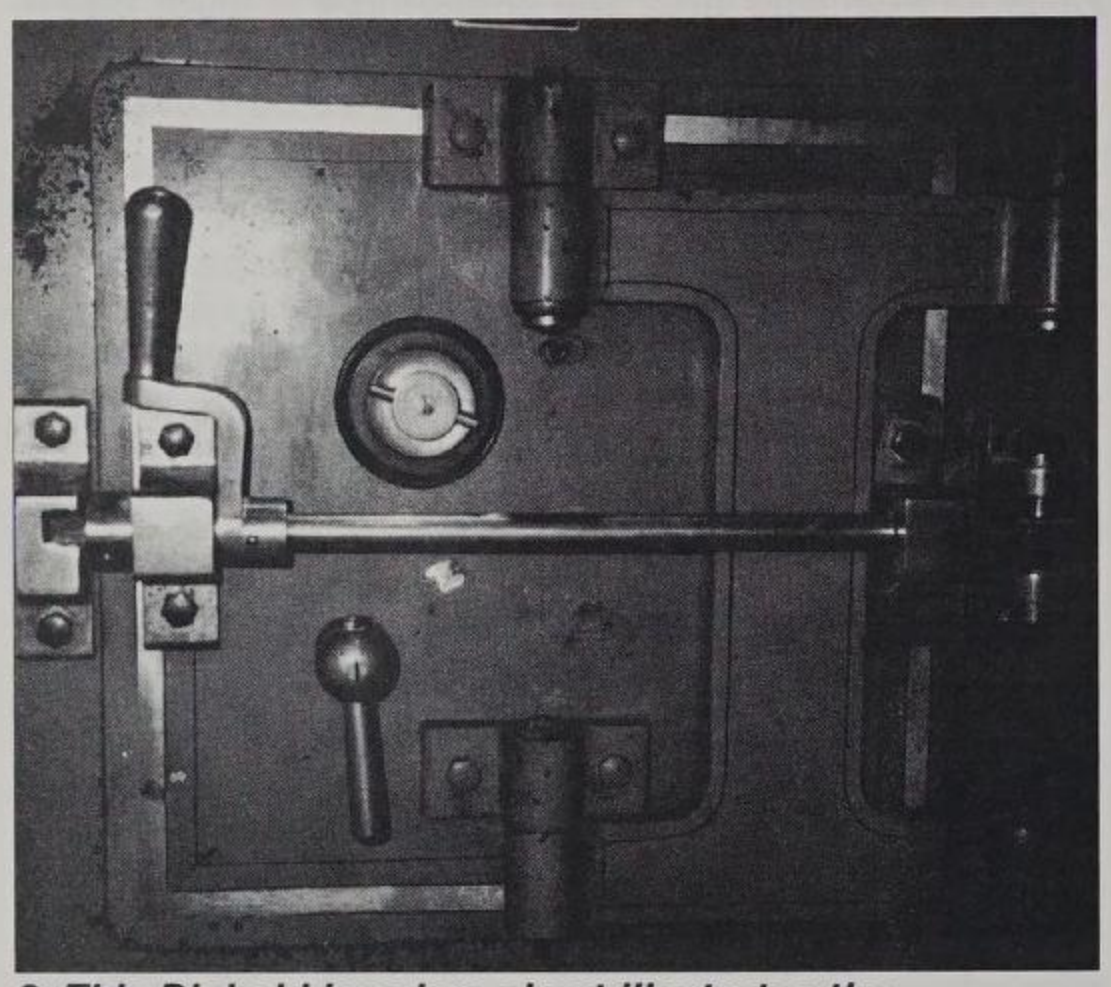
3. A look inside the door.



4. A fabricated steel plate to fit the new S&G.



5. Concaving the bolt to complete the retrofit.



6. This Diebold jewelers chest illustrates the exception.

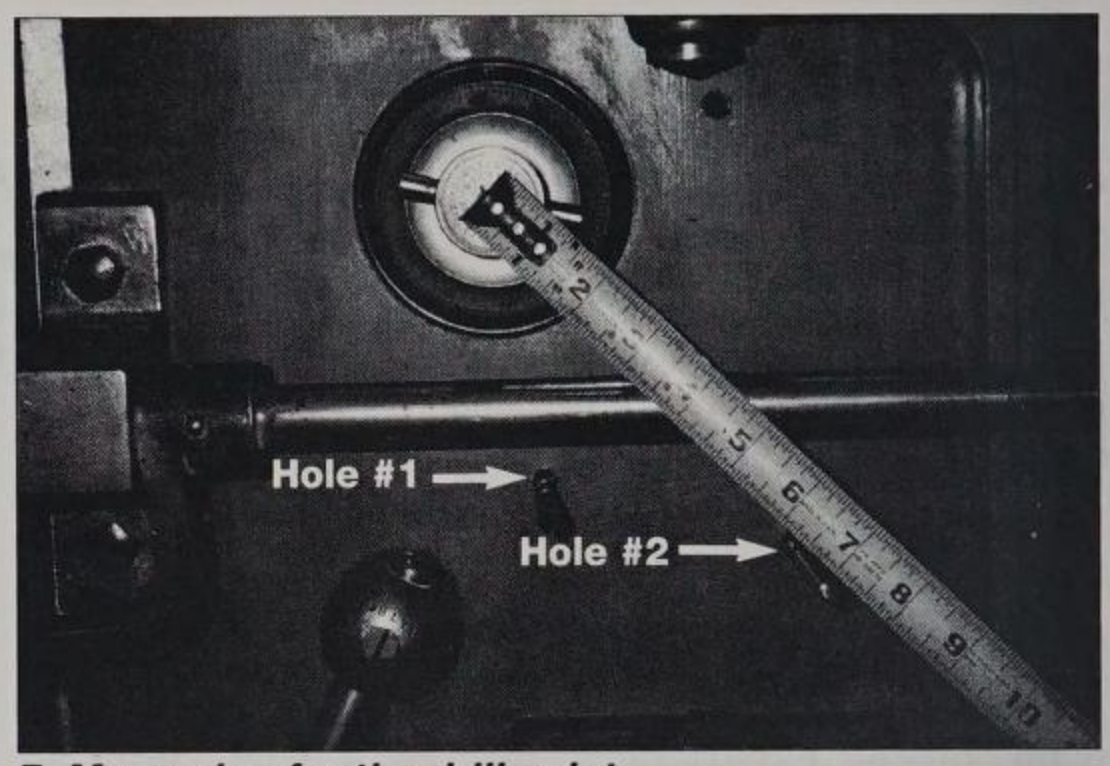
forgot: to repair his drilled hole, he overdrilled the hole from the inside, installed a 1/2" ball bearing from the inside, and underdrilled a hole in the mounting plate. Now the ball bearing spins freely as it dares someone to try and redrill through Dave's hole. Go ahead, make his day.

With the new mounting plate bolted onto the safe, Dave needed only to install a lock. So he grabbed an S&G R6730, jerked out the lockbolt and replaced it with an extended one. When he tried it in the safe, it didn't work too well. When the lockbolt was retracted, it looked like everything was hunky-dory, but as Dave turned the handle he could see that the handle cam was arcing in toward the lockbolt and would bind as it rubbed on the middle of the lockbolt. The answer: match the arc in the handle cam by concaving the end of the lockbolt. In photograph five we see the finished product. Nicely done, Dave.

The Exception

The exception was discovered during the opening of the safe shown in photograph six. This is a Diebold jewelers chest. For many years these chests were a complete mystery to safecrackers. The lock is geared way off from dial center and can be found going off in many different directions. These wild and crazy variables made deducing a drill point extremely tricky. Then, one day while struggling with a drill point, several things occurred to me:

(1) that almost all the Diebold jewelers chests I had run into had the lock mounted pretty close to the horizontal centerline of the door.

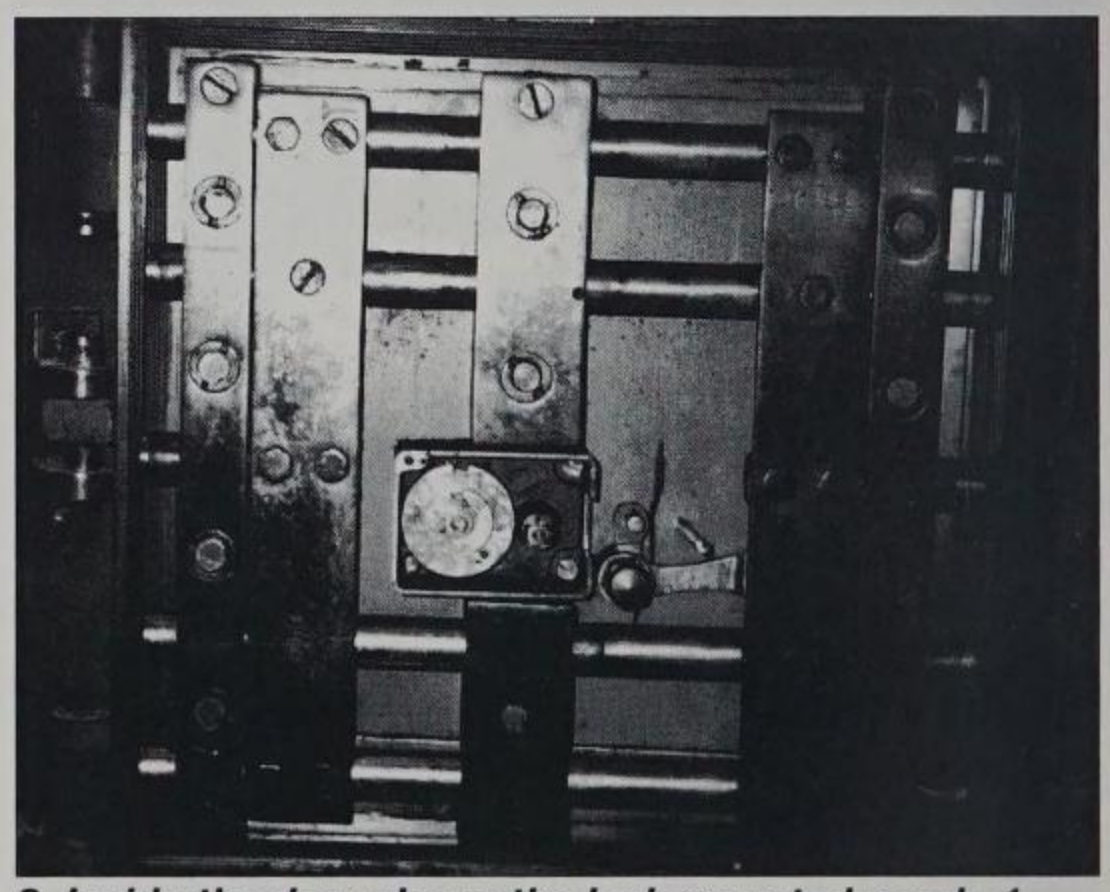


7. Measuring for the drill point.

(2) that all the Diebold jewelers chests I had taken apart – all the way apart, which means delaminating the door – used the same 3-1/2" gear train.

(3) thus, to deduce actual wheel center, all one has to do is draw a horizontal line across the center of the door, and then measure out 3-1/2" from dial center. Where these two lines meet is wheel center. Based on these assumptions, a drill point can then be deduced, and the opening can proceed in a logical manner.

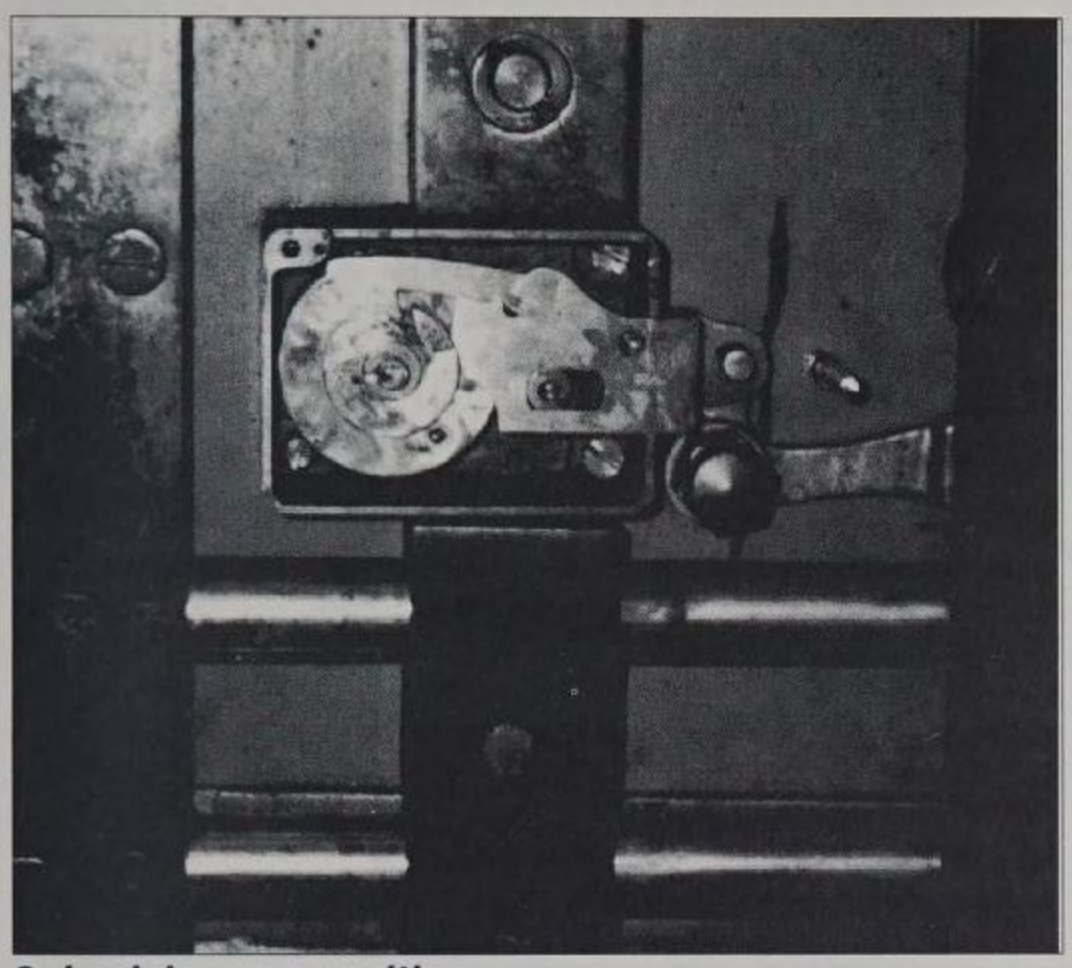
The original article containing this technique was published in the November 1986 issue of *The National Locksmith*. The response I got from guys in the field confirmed my theory. Only one exception was found: a model that used a timelock, which pushed the lock a little up



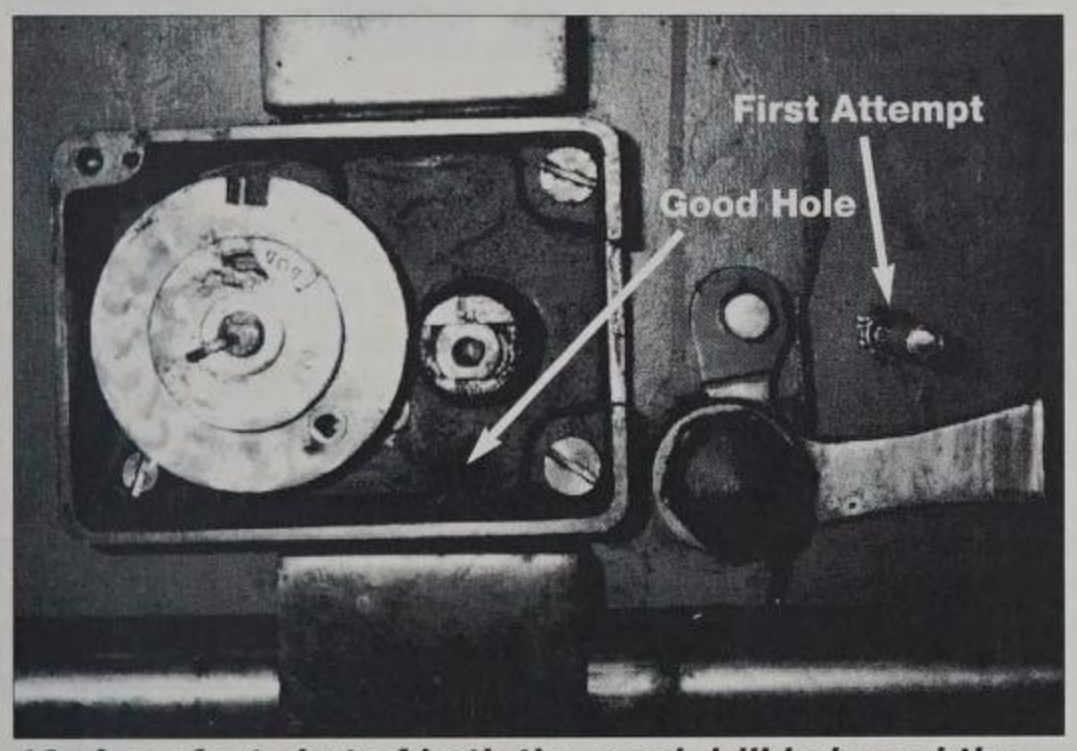
8. Inside the door shows the lock mounted nearly 1-1/2" below horizontal center.

from true horizontal center (see Safe Opening Volume 4, page 60).

Like many other safecrackers around the country, Dave Richardson had relied on this technique almost as gospel. And then he hit an exception. Of course, he didn't know it was an exception, so he did the usual trick of measuring out to see where 3-1/2" crossed the horizontal centerline, and proceeded accordingly. *(See photograph 7.)* Hole number one, which should have penetrated the lock in an open spot, was an airhole. Luckily, Dave has first-rate optical



9. Lock in open position.



10. A perfect shot of both the good drill hole and the unsuccessful first attempt.

equipment, and was able to scope through the airhole to locate the lock. His second hole nailed it and opened the jewelers chest.

Photograph eight shows the inside of the door. As we can see, the lock is mounted nearly 1-1/2" below horizontal center. What is puzzling is that there doesn't appear to be any reason for the lock being where it is. In the other exception noted above, the lock was mounted above center to accommodate a snubber bar for the timelock. In this case there is no timelock and no snubber bar to accommodate.

Photograph nine shows the lock in the open position. Notice the unusual type of linkage connected to the lockbolt. I suspect that this bellcrank-type arrangement was an early version, predating the more commonly seen anti-dynamite lockbolt which is long and performs the bellcrank function itself.

Photograph 10 is the classic trophy picture, showing both the airhole (to the right of the bellcrank) and the hole that opened the chest (below the lever post).

I love mysteries. But I hate the ones I cannot solve. And it looks like this exception to the McOmie Method is unsolvable. Drats! See ya next month.

Still no clue to the mystery.

THE S&G 6120

PART 1

by
Dave
Mc Omie

THE SARGENT & GREENLEAF 6120 IS A VERSATILE ELECTRONIC LOCK THAT CAN BE USED BY ANYBODY.

Introduction

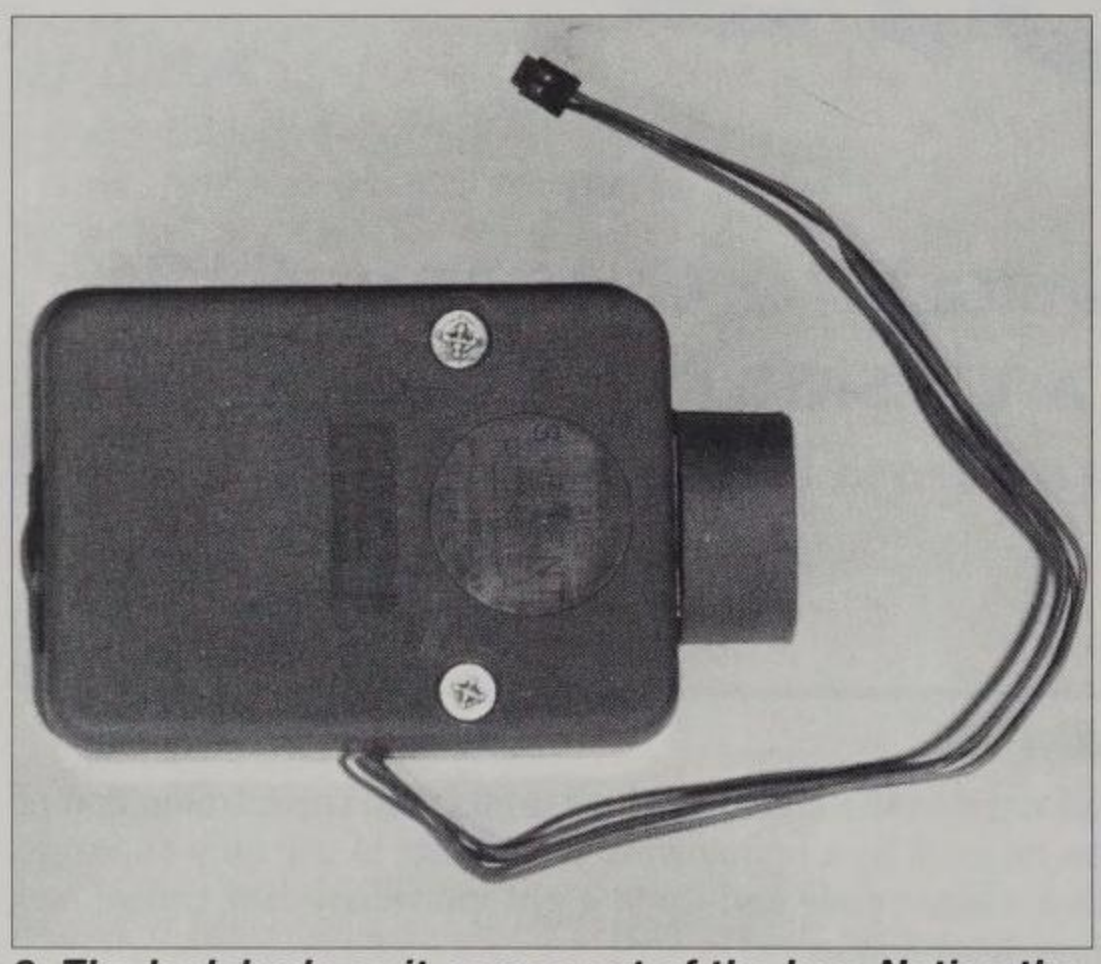
After a few false starts, Sargent & Greenleaf finally got going and entered the electronic lock arena with the introduction of the 6120. The 6120 is easily the most versatile lock in its class: it can be used by a homeowner who wants to use only one code to open the lock; it can be used as a multi-level security lock, with a master code and up to eight individual user codes; and unlike most other locks in its class, the 6120 has a programmable time delay feature.

In just a few short months, the 6120 has become the number one challenger to the LaGard 3600 as the OEM electronic safe lock of choice. So let's take a look at the new kid on the block. This month, in Section I, a "just-the-facts, dude" photo story will guide us through the simple installation of the 6120. Next month in Sections II and III, we will cover simple operations, such as inputting and changing codes, and basic programming; plus we will look at various troubleshooting and opening techniques. And, as always, I will have a few concluding remarks to make about the product.

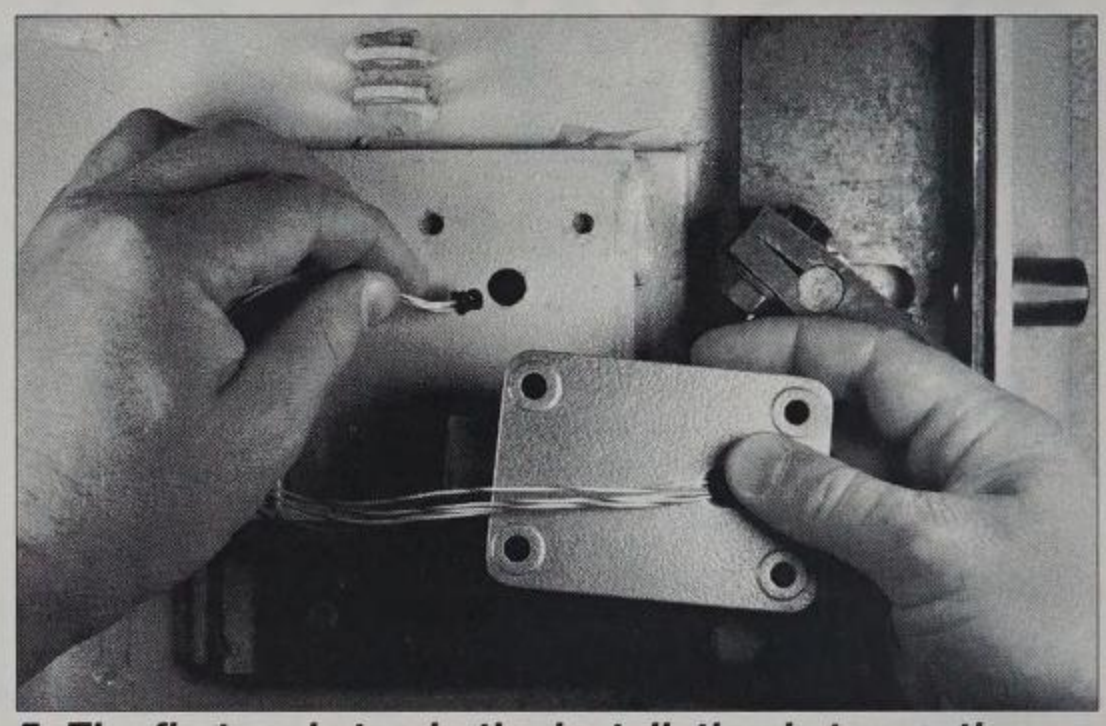
Installing the 6120

1. Although the 6120 is relatively new to the market, the keypad style has already been revised. This is the original keypad with saloon-like letters. Yee-haw!

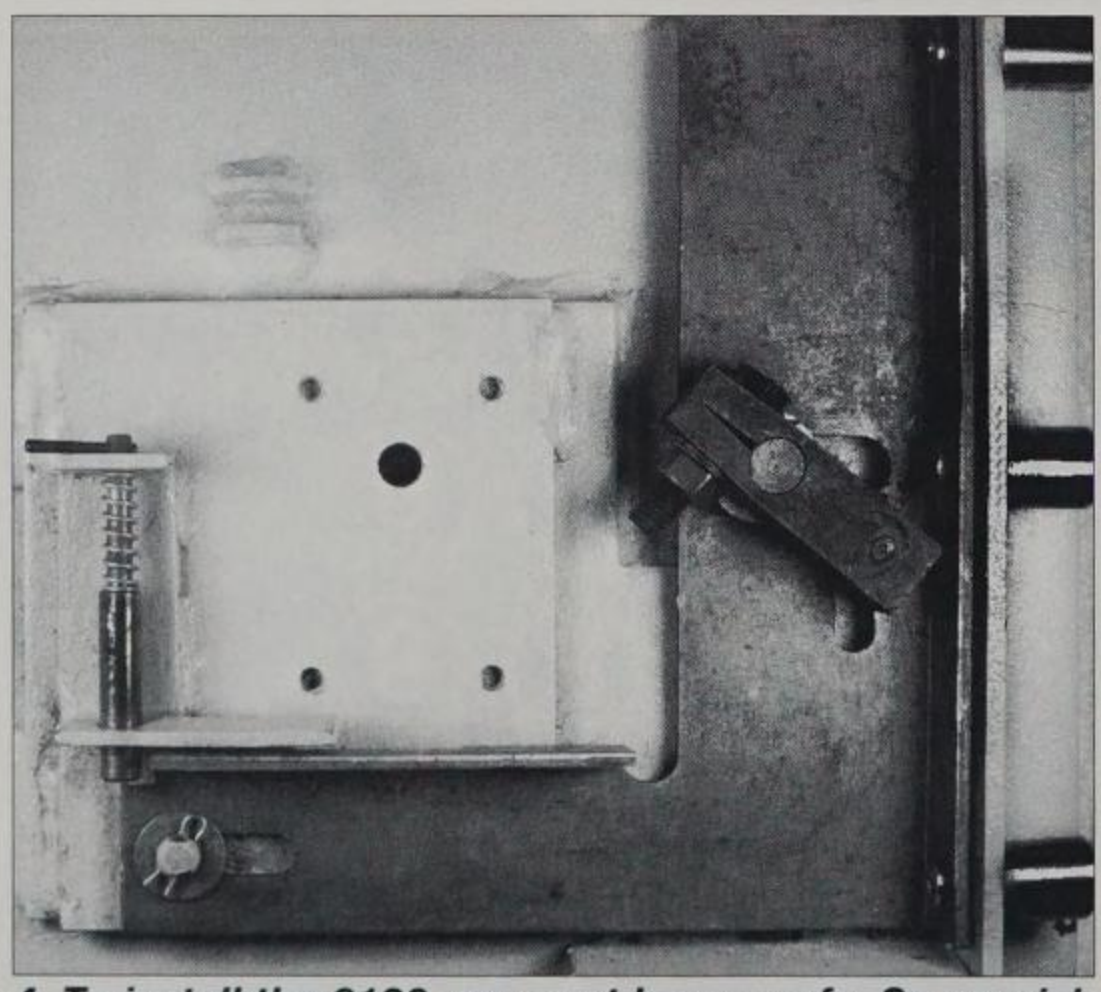
2. This is the revised keypad with its more contemporary look. The keypads are available in three colors—brass, black, and chrome, and two finishes—glossy or satin.



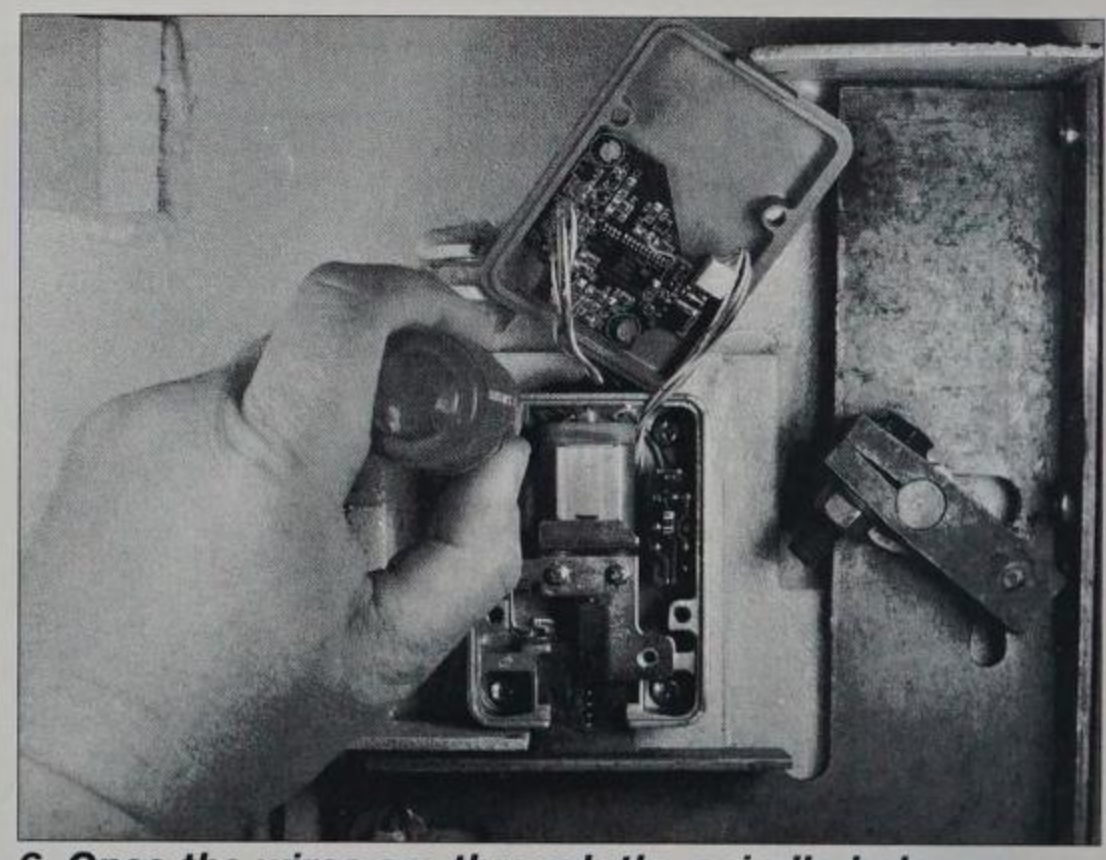
3. The lock body as it comes out of the box. Notice the protective piece of cardboard around the lockbolt. This is to protect the lockbolt from side pressure during shipping, so as to prevent the drive screw and drive nut from cross-threading.



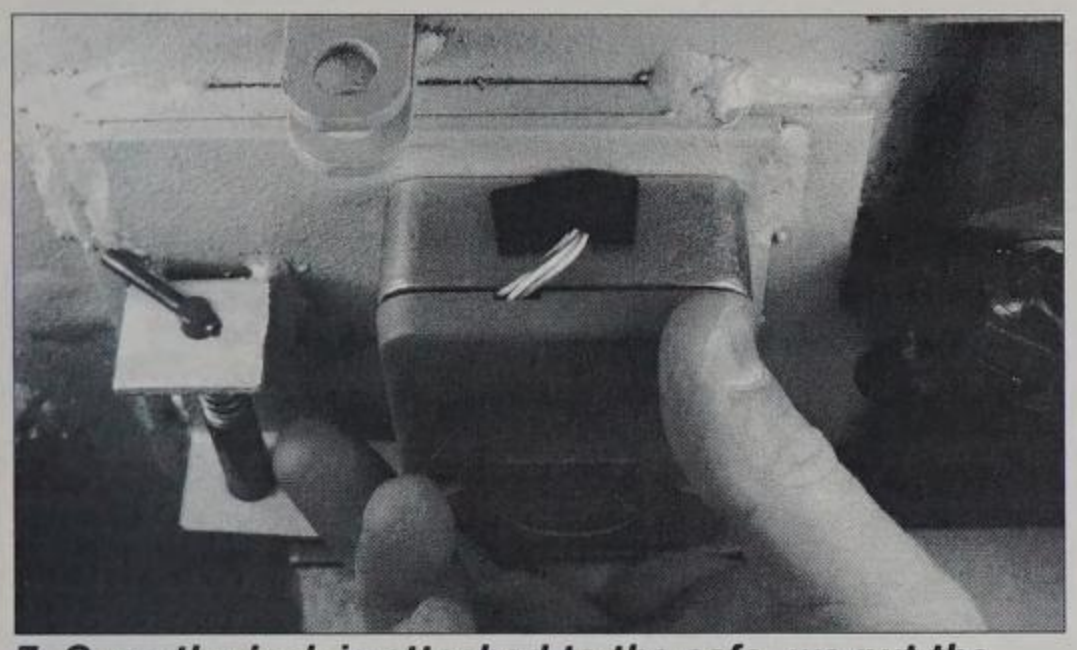
5. The first real step in the installation is to run the wires through the spindle hole. Before doing so, it is a good idea to check the spindle hole for burrs or sharp edges. If there are any, remove them with a file. One nice feature of the 6120 is the small-size wire connector that fits through any spindle hole 5/16" or larger. No crimping necessary!



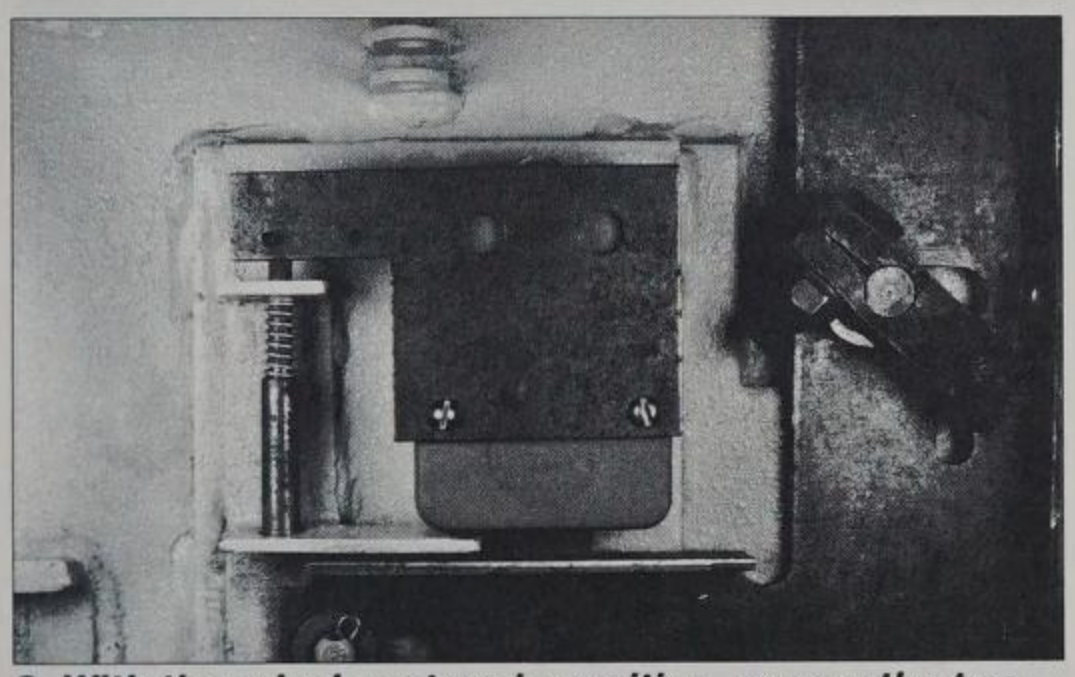
4. To install the 6120, we must have a safe. So we pick out an AMSEC Super Brute and remove the S&G R6730 that was on it. The 6120 uses the same mounting pattern (or footprint) as the 6730, which makes retrofitting a relatively straightforward task.



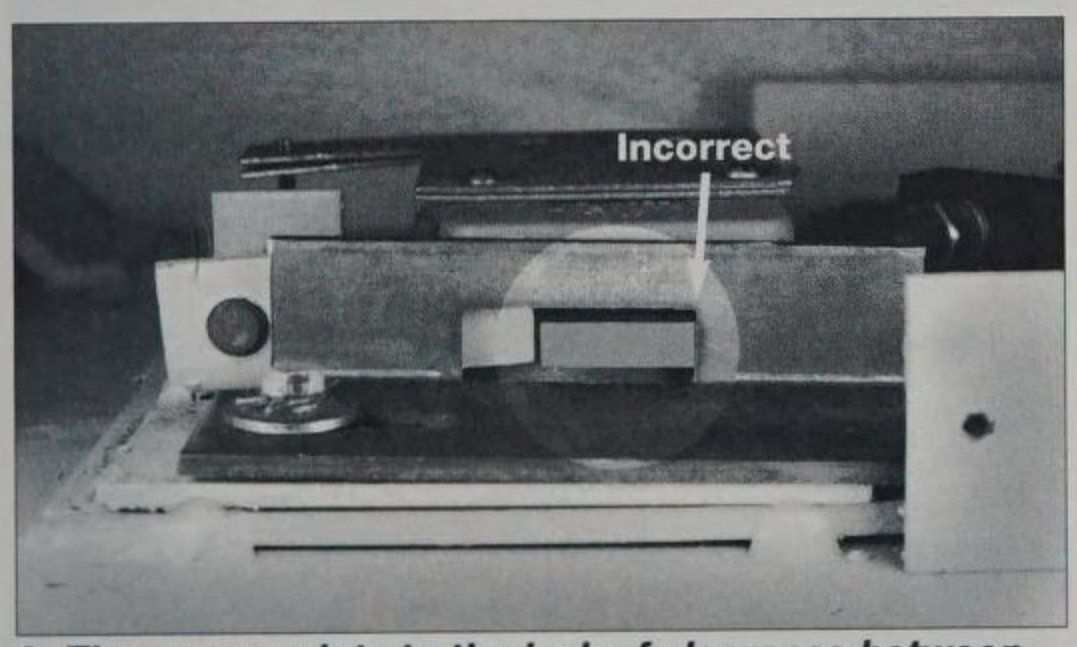
6. Once the wires are through the spindle hole, we attach the lock to the safe, using the four 1/4" x 20 screws provided. Be sure and use nail polish or Loktite (blue) on the screws.



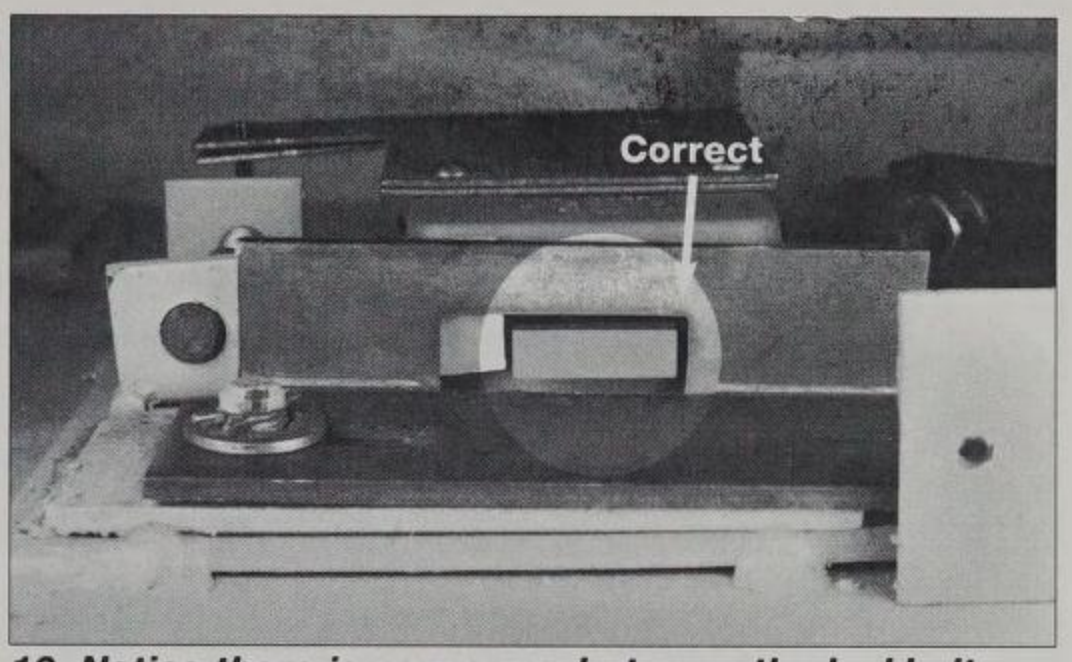
7. Once the lock is attached to the safe, we put the back cover on the lock, making sure that the wires are properly aligned with the notch in the back cover (see arrow). We don't put the back cover screws in yet, because we have an external relocker strap to contend with. Sometimes it helps to use two little strips of masking tape to hold the back cover in place while you are trying to install the relocker strap.



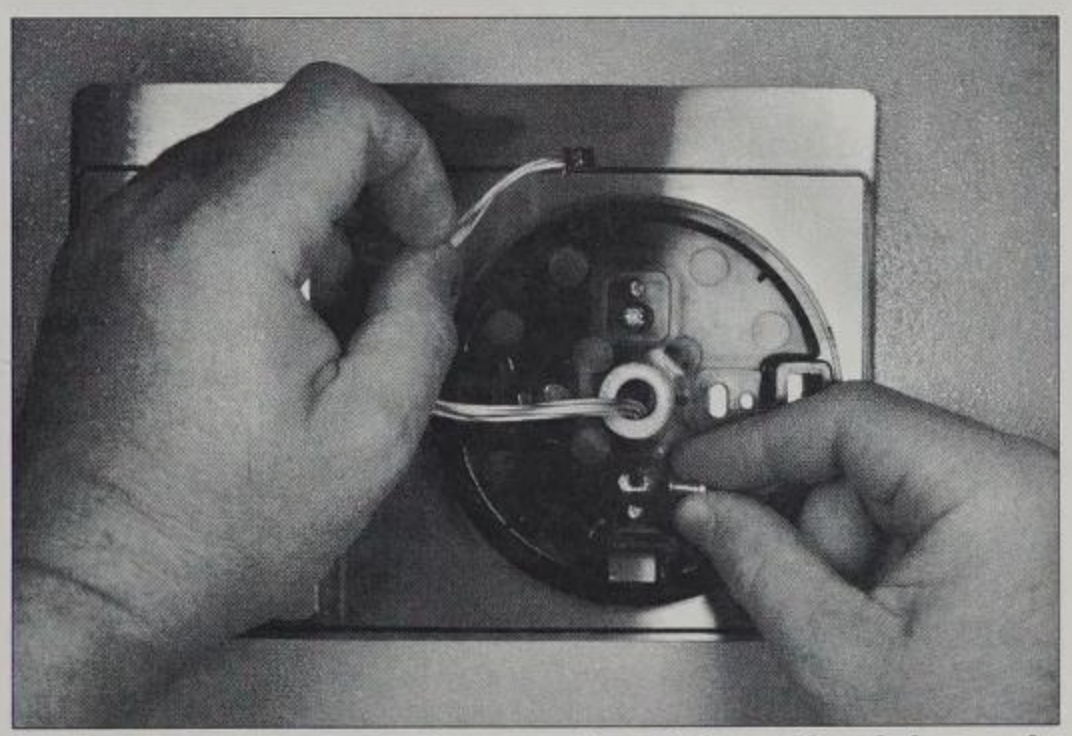
8. With the relocker strap in position, we run the two back cover screws through the holes in the strap, through the holes in the back cover, and tighten down securely. The installation on the inside of the safe door is now complete. But before we move to the outside of the door, let's go to photo nine and check for proper lockbolt clearance.



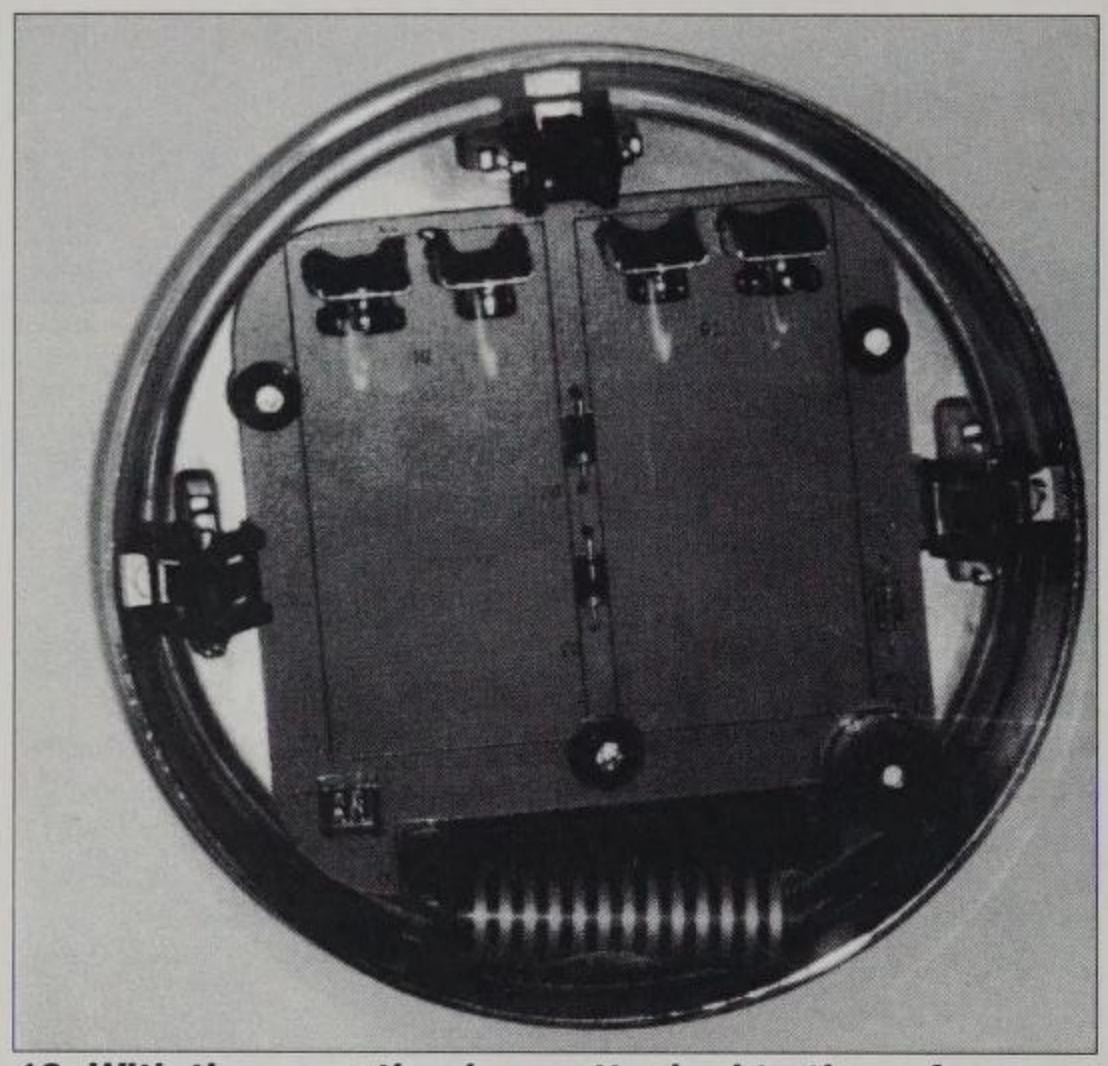
9. The arrow points to the lack of clearance between the right side of the lockbolt and the boltbar. This may cause side pressure on the lockbolt, resulting in a lockbolt that fails to retract consistently.



10. Notice there is now a gap between the lockbolt and boltbar. This was accomplished by filing a little off the boltbar, which is sometimes easier said than done, given that some boltbars are difficult to get to or have to be removed to work on. This is the one aspect of installing a 6120 that has the potential to be a real pain-in-the-butt. But this kind of clearance is necessary to proper functioning, and greatly minimizes the chances of a malfunction.

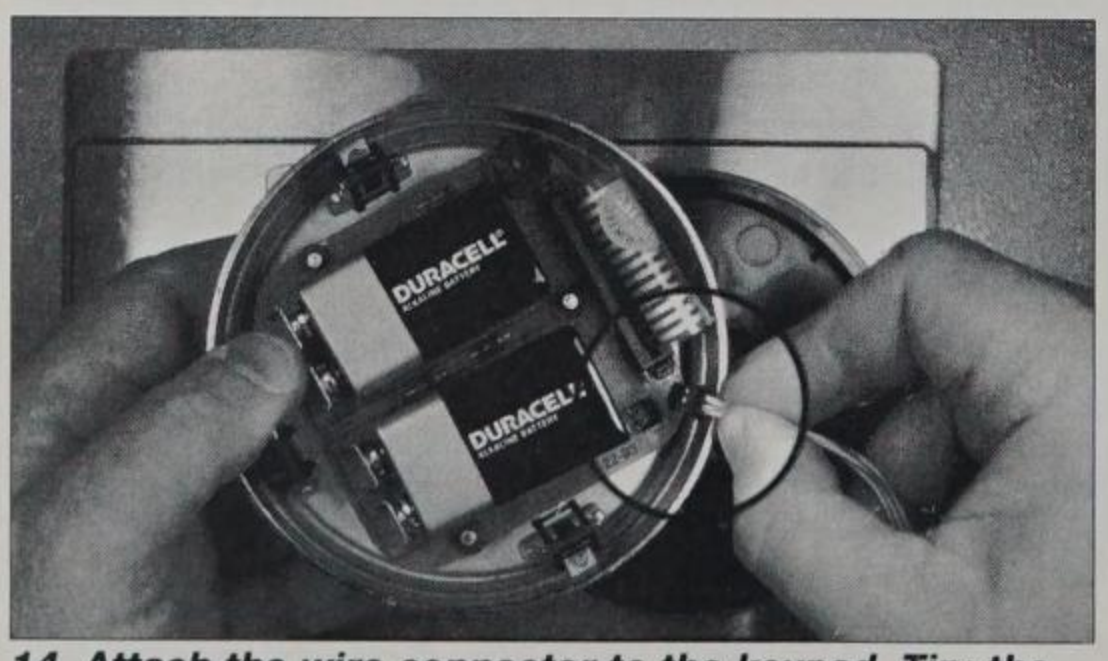


11. Now we move to the outside of the safe. Job one is to attach the mounting base. First we take the wires that are sticking through the spindle hole of the safe, and run them through the center hole of the mounting base. Then we attach the mounting base to the safe with the two 8 x 32 screws provided. The screw holes in the mounting base will line up with those used with nearly all S&G dial rings. No drilling and tapping necessary!

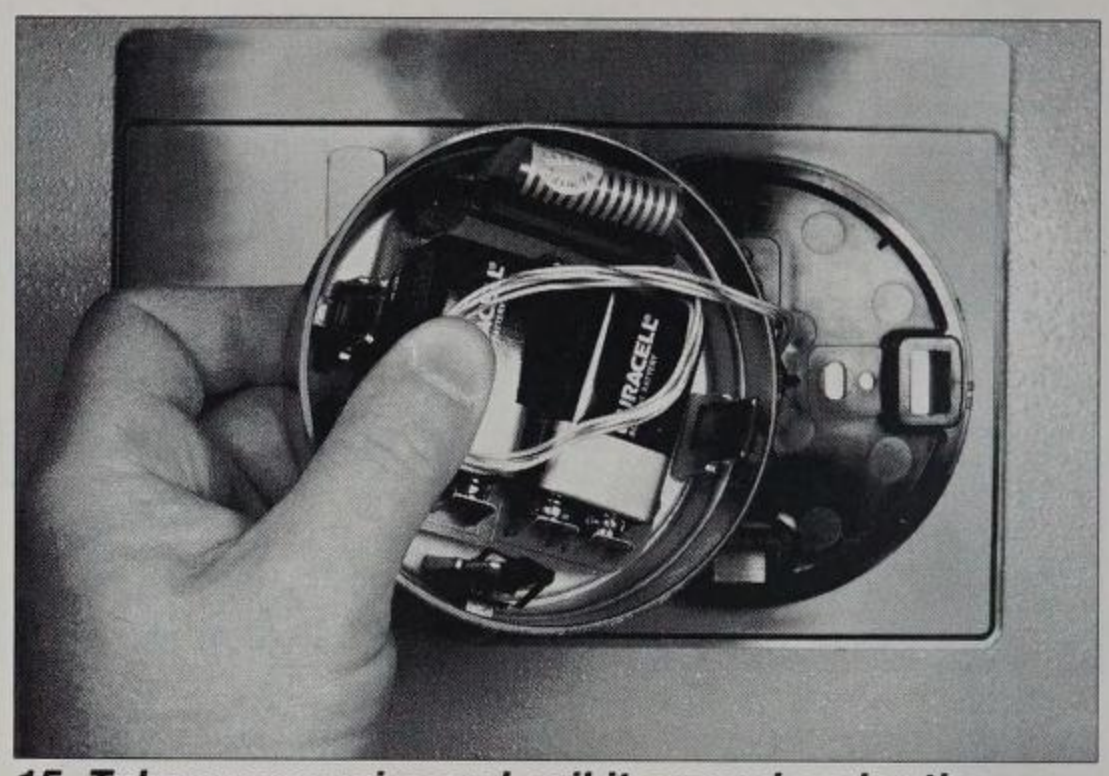


12. With the mounting base attached to the safe, we are down to the last component: the keypad. Notice that there are no batteries in the keypad.

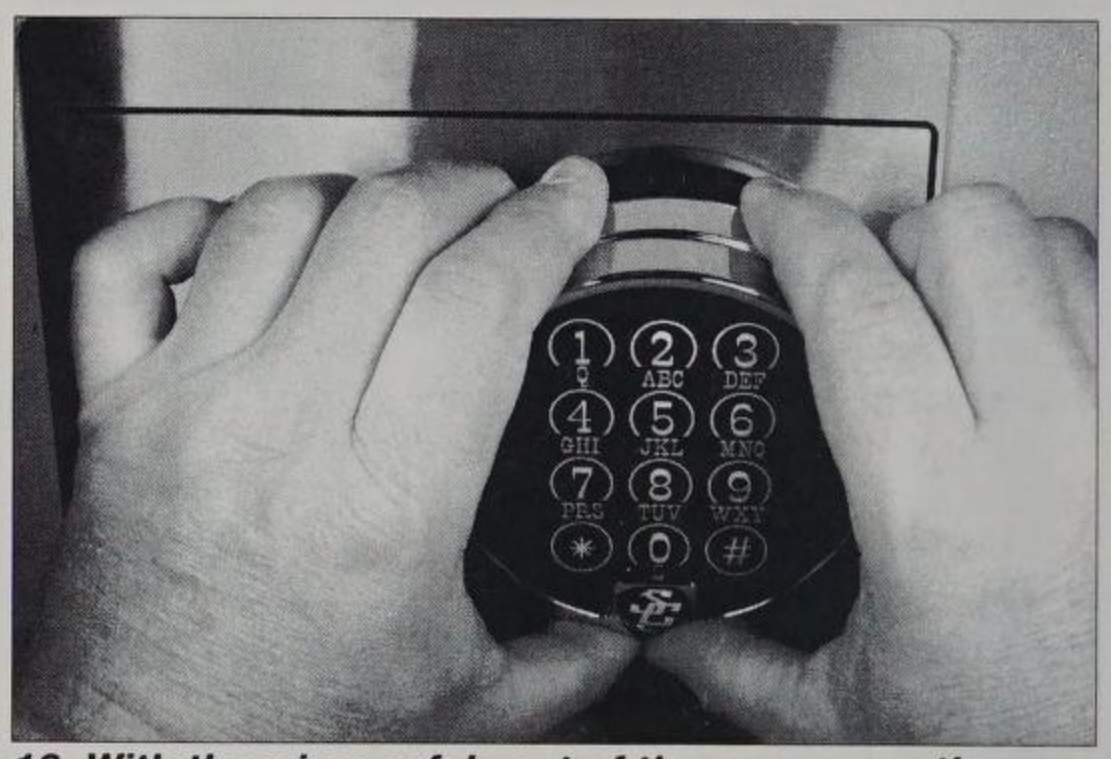
13. We go out and buy two 9-volt Duracells and install them in the keypad. Tip: Duracells will provide more power and longer life than other alkaline batteries on the market. Tip: when installing batteries, use the tip of your finger to provide support for the battery contacts, otherwise they may break off.



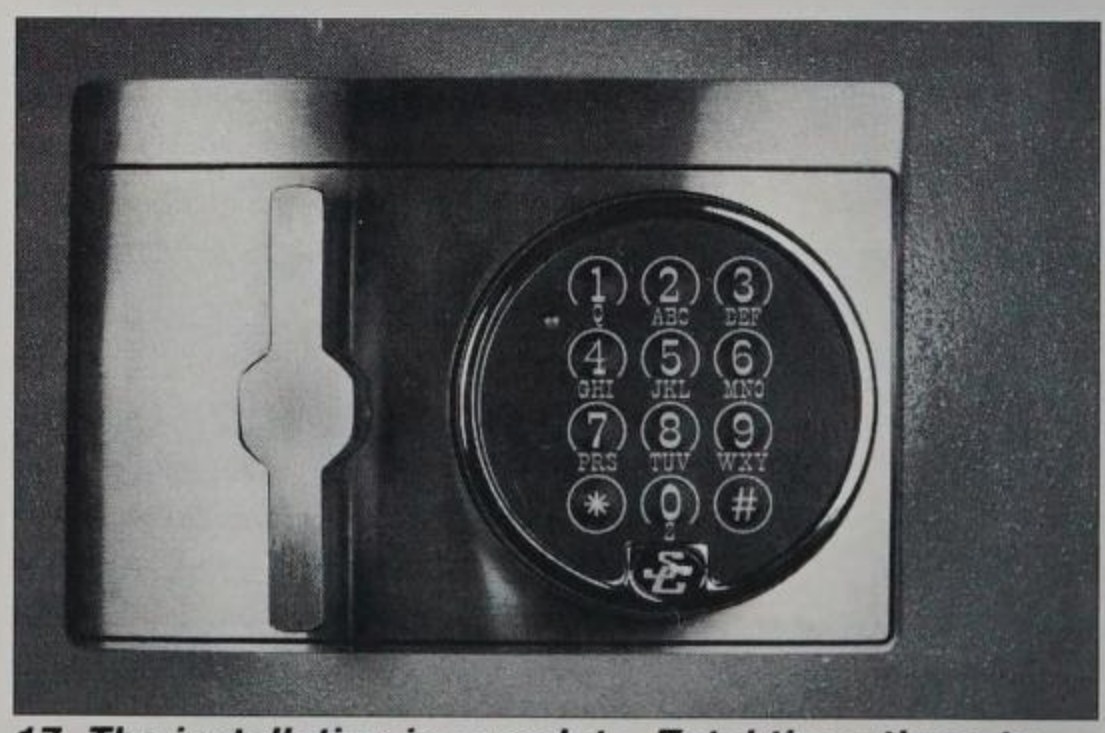
14. Attach the wire connector to the keypad. Tip: the connector goes on only one way, you don't need to force it. If it doesn't slide on easily, flip it around 180 degrees and try again.



15. Take excess wire and coil it around under the keypad. Tip: make sure that the wires don't get tangled up in the spring clips that will secure the keypad to its mounting base. If you have any doubts about positioning the wires, you might even scotch tape them to the batteries.



16. With the wires safely out of the way, press the keypad onto the mounting base. You will feel it click into position.



17. The installation is complete. Total time: three to five minutes, unless you have to modify the boltbar to provide enough side clearance for the lockbolt.

The S&G 6120 Part 2

by Dave Mc Omie

This month we continue on our journey with the S&G 6120 electronic safe lock

Using the 6120

Opening the lock is simple. All combinations, or codes, contain exactly six digits followed by the # sign, so all you do to open the lock is punch in the correct 6-digit code, followed by the # sign, and the lock will open. The factory code is 1-2-3-4-5-6-#.

- Each time a button is pressed on a functioning lock, it emits a "chirp" and the LED on the keypad lights momentarily. Being hearing-impaired, I especially like the LED feature, because some safes are in noisy areas that make it nearly impossible to hear the chirp.
- When the correct code is entered, followed by the # sign, the lockbolt will retract for about six seconds before automatically extending back to the locked position.
- If you pause more than 10 seconds between pressing buttons when entering a code, the lock will clear itself. To open the lock, you now need to start over.
- If you mess up when entering a code, press * to clear the lock and start over.
- If four incorrect codes are entered consecutively, the lock will shut down for 15 minutes. During the 15 minutes of shut-down, the lock will still beep and the LED will still light whenever a key is pressed, but the lock will not accept the input. This security feature can be overridden by entering the master code to reset the lock; then you must either enter the master code again or enter a user code to open the lock. This override feature is a nice touch: if an employee screws up and causes the lock to shut down, the manager can use the master code to reset the lock, thereby avoiding the hassle of a 15-minute wait. Well done, S&G!
- When battery power gets low, the lock will emit noticeably higher-pitched chirps whenever a key is pressed. This will continue until the batteries are replaced or until the lock fails. Once the higher chirps begin, the batteries will open the lock about twenty more times before a failure occurs.

Tip: To hear what the higher chirps sound like, depress the * key for about three seconds, until the lock emits three chirps. Enter a code. Each time a key is pressed, you will hear the higher chirps. In a few seconds, the lock will revert back to normal sounding chirps.

Opening Options

In case of a malfunction, where a valid user code has been entered but the lock fails to open, try the following three troubleshooting techniques:

1. Rotate the bolt-control handle to the fully locked position. Now try the code again. If the initial failure was due to side pressure on the lockbolt, this should overcome the problem. You can increase your chances of success by shocking the door with a mallet as you press #.

2. Replace the two 9-volt batteries in the keypad. Be sure to use Duracells, as tests have shown Duracells to outperform the others. If the malfunction was due to low battery power, this will overcome the problem.

3. Replace the keypad with a new one. Install new Duracells and try the code. If the malfunction was due to a problem in the keypad, this will overcome the problem.

Drill Options

If the above methods fail to open the lock, or if you are dealing with a lost combination, it is time to drill. As I see it, we have four drilling options:

1. Drill to defeat the boltwork of the safe, rather than the lock. For example, on many fire safes, you can punch the handle cam back far enough to bypass the lockbolt. This saves the lock.

2. Remove the keypad and mounting base. Drill 1-1/8" out from dial center in whichever direction the lockbolt is pointing. Penetrate the lock case and check your hole. You will be right in the middle of the drive screw. Using a bent wire, reach in and yank out the spring that is wrapped around the drive screw. Now carefully drill the drive screw in half. The half that is on the side of your hole furthest from dial center (keypad center) is attached to the lockbolt. Hook and/or pry the drive screw toward keypad center to retract the lockbolt. The disadvantage of this technique is that it ruins the lock; the advantage is that the drill repair is contained under the keypad.

3. Side or top drill the safe to punch the lockbolt into the lock. The lockbolt of a 6120 is deadlocking; you cannot just push it in the way you can an Amsec KPL-100. Even though

Once installed, the S&G 6120 is programmed from the keypad.

the lockbolt deadlocks, it will drive in fairly easily. This technique (usually) sets off no relockers, and the drill repair is far away from the area around the keypad.

4. Drill through the door to punch the lockbolt in. If there is an external relocker attached to the back cover of the lock, this technique will set it off. The drill point for punching the lockbolt is 2-1/2" in whichever direction the lockbolt is pointing. This is a last-resort technique—it sets off relockers, and the drilled hole is outside the dial ring, which makes the repair a bit of a pain.

Conclusion

The 6120 is a fine first-entry into the electronic lock market. But I am both impressed and underwhelmed. I like the look and feel of the keypad. The lock is user-friendly—it is easy to install and easy to operate. It is loaded with excellent features. And the list price of $227 is competitive.

But four things about the lock bother me. First, the lock case and back cover are made out of different materials; the lock case is pot metal, the back cover is plastic. They don't even look like they go together, because they have radically different textures and are different shades of gray. But this criticism might be overly nit-picky; I may be the only one who feels this way.

The second thing that bothers me is the wiring. It is messy. You have to baby the wires when you remove the back cover, when you attach the lock, and when you reattach the back cover. Plus, it just looks hokey to have a little wad of wires all bunched up going through a "notch" in the back cover.

It would be a great improvement if S&G would put a cable around the wires, and through-bolt the lockcase so we don't even have to take the back cover off to attach the lock.

The third thing is the "sproing" sound the lock makes during lockbolt retraction. You will notice that, unlike LaGard's motor-bolt, S&G's 6120 doesn't take all day to open—the lockbolt retracts faster than you can say "sproing." This is a plus for customer convenience, but the high speed makes one wonder about the possibility of the plastic drive nut cross-threading on the brass drive screw. Cross-threading was a problem early on, but S&G claims to have solved it (a) by positioning the motor so that the drive screw and lockbolt project perfectly perpendicular to the lockcase, and (b) by gluing the motor into position. So, provided S&G has indeed solved the problem, I really shouldn't let the "sproing" bother me.

The fourth thing is, well, that I expected something more from the biggest name in the history of combination locks. For more than a century, Sargent & Greenleaf has been the creator, the innovator, the mover and shaker in the industry. But if you look on the back cover of a 6120 you will see two patent numbers: 5,020,345 and 5,033,282. Both of these patents are owned by LaGard!. That's right, S&G had to make a deal with LaGard to borrow some technology. But I have to ask—and answer—the bottom line question: which lock would I rather have on my own safe, a LaGard 3600 or an S&G 6120? The answer is, without a doubt, the 6120. S&G wins this round walking away. But of course LaGard does have the development of the patents to their credit.

Note: This article was sent to Sargent & Greenleaf for comment. Their response is encouraging: S&G has decided to enclose the wires in a ribbon cable, and to through-bolt the lockcase. We can expect these changes to be in effect early next year. Two cheers for industry cooperation!

S&G has been steadily improving the 6120.
It is one of my favorite electronic locks on the commercial market.

THE NKL NIGHTMARE

by Dave Mc Omie

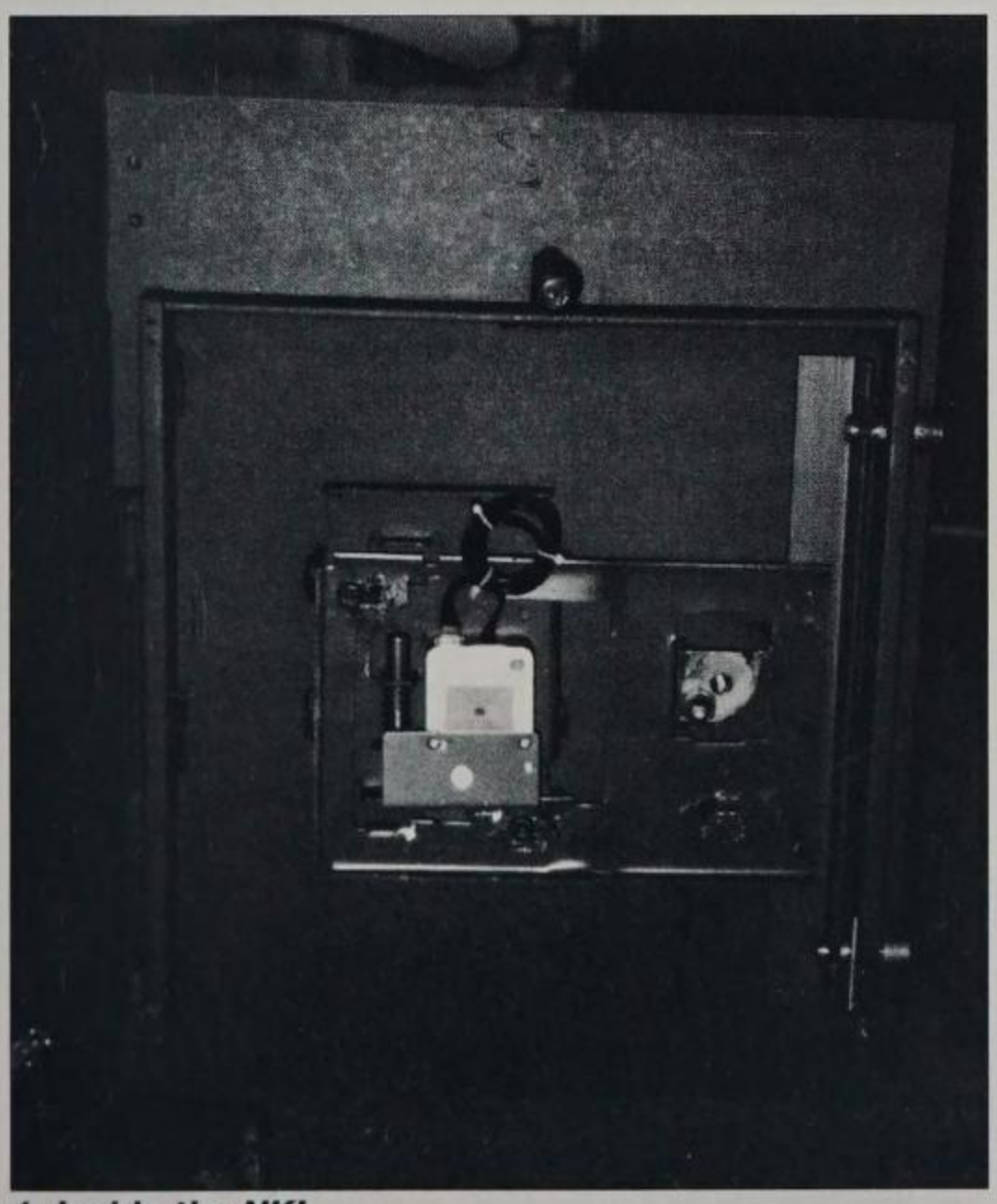
After receiving phone calls and faxes from numerous locksmiths and safemen reporting problems with NKL, I thought it necessary to bring out this story. Judge for yourself.

A year ago, I did a warranty opening for NKL, and had an experience I don't wish on any of you. Following is a slightly condensed version of an article that I wrote for the Autumn 1994 issue of "The National Safeman". After receiving phone calls and faxes from numerous locksmiths and safemen reporting problems with NKL, I thought it prudent and necessary to bring this story to a wider audience. Judge for yourself.

February 22, 1994: I receive a call from Gateway Safe & Lock, in Portland, Oregon. They are supposed to deliver an NKL electronic safe to a fast-food restaurant, but the safe will not open. Gateway is extremely busy, will I please come open the safe?

I arrive at their shop, and meet the NKL. I input the code, but the lock appears dead. The batteries are replaced—the obligatory first response we must make to a dead lock. Result: nothing. The LaGard 3600 is not cooperating. After playing with the lock for a while, I decide that it is Time To Drill.

But before drilling for the solenoid, I want to try a little trick. You see, I have worked out this beautiful little theory about how to open a 3600 Swingbolt lock right through the spindle hole. It is time to test the theory. Here are the steps involved:



1. Inside the NKL.

First, figure out which way the lock is mounted. In this NKL, I know the lock is vertical down. Following the path of the cable verifies this. (Thanks Dale! See "The Cable Channel," *The National Locksmith*, January 1995.)

Second, chuck up a small bit and drill through the spindle hole of the safe right into the lockcase. This requires drilling at a compound angle, down and to the left.

Third, look into the hole; if the hole is properly placed, the wires coming out from the solenoid will be visible through the hole. They are.

Fourth, reach in with a hook-wire and gently tug on the wires. Pull the excess wire out the hole. From here it is a simple matter of melting off the plastic wrap to expose the wires, and jump them with a 9-volt battery. You are putting power directly to the solenoid—it will open.

Well, the theory was working out just fine. Steps one, two and three went off without a hitch. Then, in step four, while I was gently tugging on the wires, the red one broke off at the solenoid. Dangnabbit! I had no way to get power to the solenoid. Believe me, I gave it my best shot. I dangled jumper wires in the lock, hoping to hit the body of the solenoid in just the right place, perhaps even right where the wire had broken off. But all I got was the big donut, nada, zilch, zippo.

So I had to give up on my pet theory and open the safe by more conventional means: by drilling through the door for the solenoid.

By the way, I must say that I was impressed with the hardplate NKL is using. It isn't Relsom, but it is pretty darn good, especially for a B-rate safe.

When the hole is complete, I peek in. Perfect, right on the solenoid piston. I insert my trusty Downie Pin, flick and hold back the piston, and rotate the handle. The NKL is open.

Photograph one shows the inside of the door. There are two locking bolts on the opening side. There is a long deadbar on the hinge side. The lock is mounted VD, and there is an external relocker alongside the lock.

When I looked closely at the lock, I could see the source of the original problem: the lock wasn't plugged in! No wonder nothing was happening. If the lock isn't plugged in, it cannot receive or accept any input.

Photograph two is a close-up of the area around the lock and relocker. Look real hard and you can see the hole that

opened the safe, right at the end of the solenoid. The other hole (the one that didn't work) can't be seen, because it is covered by the solenoid.

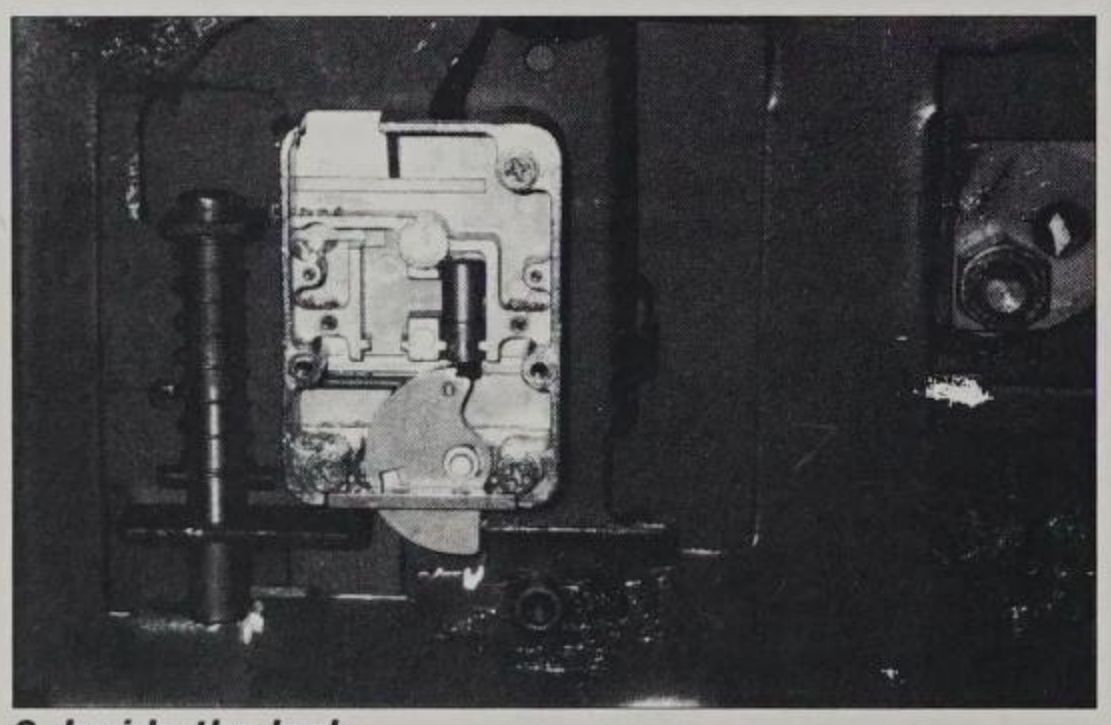
Curiously, I had to force the boltwork to extend farther than it wanted to, in order to get the relocker to fire for this photo. In other words, the relocker slot in the boltbar was not aligned with the relocker. During the opening, I could have punched in the lockbolt, and the relocker would not have fired! Gateway had a second NKL on the floor awaiting delivery. Out of curiosity, I disassembled it and found the identical problem. Hmmm. If other locksmiths and safemen are experiencing similar relocker misalignments, NKL might want to check it out.

All in all, the opening went pretty smooth, even though I had to switch to Plan B. My theory for opening a 3600 through the spindle hole didn't work out this time, but I still think it can be done.

Well, Ken Catchpole and I worked out repair duties, he gave me the work authorization number I would need for billing NKL, and I went on my merry way.

What follows is going to blow your mind, so prepare yourself. Do not try to read this at work; it will be too upsetting. Wait until you get home. Go ahead and take the magazine out of the shop, just be sure and bring it back tomorrow morning. Now, after you have gotten home and eaten dinner, sit down in your favorite easy chair. With your feet up, and your favorite brew on its way down the hatch, you may continue reading this bizarre story.

February 24: I send NKL an invoice for services performed. Along with the pricing breakdown, I include the serial number of the safe, NKL's authorization number, and their procedure code. The grand total, including the service call, the opening and repair, is $195, my standard opening fee for B and C rate safes, and for most fire safes. (I didn't charge them for the solenoid that was replaced, since I felt responsible for ruining the old one.)



2. Inside the lock.

March 11, 11:00: In the mail is a form letter from NKL, denying payment. NKL says "We are sorry, but we are unable to process your invoice due to the following reasons: the price is not according to NKL pricing structure, and we do not pay for unauthorized service." For the record, NKL's pricing structure allows $63 to cover the service call, opening and refinishing of the door. No joke.

March 11, 11:30: Talk about deja vu. Years ago, I went through a major hassle getting paid for warranty openings I did for a certain midwest private-labeler of Korean-made B-rate safes. Wanting to avoid a similar hassle this time around, I send NKL a fax, saying the following:

"NKL refuses to pay me for a safe opening, and cites two reasons in their defense. (1) the price on my invoice is not according to NKL's pricing structure, and (2), NKL does not pay for unauthorized service.

Okay, let's take them one at a time. (1) You are quite right: the price on my invoice does not reflect NKL's pricing structure—it reflects mine. Is NKL trying to fix prices? As for (2), I obtained a Work Authorization Number, a Procedure Code, and the serial number of the safe. How does this translate into the work being 'unauthorized?' I await your response."

March 14: Ray Lorenzo, president of NKL, calls to talk it over. He agrees to pay my higher price, and also agrees to answer—in writing—some questions that I still have concerning NKL's policies.

March 24: I receive a copy of NKL's official Schedule of Service Codes and Authorized Charges. Looking it over, I am blown away at NKL's capacity for audacity, so I fax Ray Lorenzo some hard-hitting questions that need to be asked. To his credit, Ray responds within three days. Following are my questions and his answers:

DM: NKL pays $63 to cover the service trip, drilling and refinishing of their B and C rate safes. NKL claims that their prices "reflect the usual and customary level of pricing that we find across the nation. . . the schedule of charges is based on national averages and we feel that they are fair."

QUESTION: Where did NKL obtain the data on which these claims are based?

NKL: NKL allows $63 for drilling the outer door. In most cases, drilling involves the replacement of the lock, adjustment of the boltwork, and some other replacement of parts. The average drill job under this program amounts to $112. This program has resulted in. . . the elimination of those locksmiths who routinely charged us $300 to $800 for the same service. . . . This program is not so much about trying to cheat a locksmith out of earning a living, but an attempt to introduce some structure to the system, as well as protect our company from unscrupulous and incompetent locksmiths.

DM: For the national pricing average of opening and refinishing a B or C rated safe to be $63, there must be some locksmiths doing the work for more than $63, and some for less.

QUESTION: Can NKL provide me with the names of two or three shops anywhere in the United States whose standard charge for the service call, opening and refinishing of a B or C rated safe is $63 or less?

NKL: I cannot provide you with any names, because simply, we have not paid any locksmith less than $100 for the service.

DM: On the front page of NKL's Technical Services Memo, which was mailed to locksmiths all over the country, NKL informs the locksmith that "IF you receive this memo,

we are assuming you agree with NKL's National Servicing Program Schedule of Charges and Services. If you do not, notify us immediately."

QUESTION: In logic, there is a fallacy called the Unwarranted Assumption. Don't you think NKL commits this fallacy when they assume that locksmiths who receive the unsolicited Technical Services Memo agree with it?

NKL: With the first mailing, we asked the locksmiths to call us and let us know if they did not agree with the program. As a matter of fact, over 75 of them did just that and were rapidly deleted from our database. The second mailing (the one you refer to) was sent only to those locksmiths that did not respond negatively to the first mailing. A wrong assumption? Perhaps, but it was the best and most effective system that we could think of at the time to put all of our locksmiths on notice.

DM: On the same page, NKL says this to all the locksmiths who received the unsolicited Technical Services Memo: "Currently, we have over 300 confirmed participants (which you are one of, since you received this memo). . . ."

QUESTION: Once again, don't you think NKL commits the fallacy of the Unwarranted Assumption when they consider the recipient of an unsolicited memo a "confirmed participant?"

NKL: Today we have 465 participants. Another unwarranted assumption? Perhaps.

. . . We have always said that this first attempt would have some bugs. We are now ready to revise it and the enclosed schedule (which is not final) is the first effort.

April: Ray and I chat briefly. I tell him that the revised schedule of charges is much more reasonable, and that it will help restore NKL's already tarnished image among professional locksmiths. I am under the distinct impression that unless I here otherwise from Ray, the revised schedule of charges will be in effect any day now.

Feeling like I had just secured a little victory for the working locksmith, I praise Ray and NKL in the Spring issue of The National Safeman, saying that I found them "open-minded and fair to deal with" and that NKL had "more than doubled the price." The simple fact is that $130 looks a heck of a lot better than $63. I suspect it is still below the national average, but it does represent a step forward.

June and July: I receive about a half dozen phone calls and faxes from locksmiths around the country, saying that they read my comments in "The National Safeman," but that NKL hasn't budged off the $63. Furthermore, the locksmiths tell me that when they told NKL what they had read in "The National Safeman," NKL told them that "Mr. McOmie misunderstood what Mr. Lorenzo was trying to say" and that "Mr. McOmie is in error."

July: I am royally P.O.'d. NKL is portraying me as either a fool or a liar! I had intended on breaking the good news concerning the price increase in the Summer issue of "The National Safeman." But now it appears that the good news was either a figment of my imagination, or else NKL said one thing while doing another. Well, I knew that it wasn't my imagination, because I had everything in writing! I fired off a fax to NKL, asking "Will the real NKL please stand up? Which is it, folks—do I go to press with April's agreement or July's denial?"

July 8: I receive a fax from Pam Cummings of NKL. It is absolutely Orwellian. She says that "Ray did speak to you back in February regarding our National Servicing Program and the schedule of approved charges. As he explained to you at that time, these charges are broken down by procedures and when you went out and opened one of our safes he agreed to pay you the total of those procedures which you performed for us. This is what you saw as authorizing a higher-than-schedule-of-charges price. You see, when you combine all of the necessary steps to open and repair a safe, the price is based on that total. I am sure that once Ray returns from his vacation, he will be able to straighten out any misunderstanding that exists."

As I hold Pam's fax, I can't believe what I am reading. This is Newspeak, right out of 1984. In the first place, Pam claims there never was a price increase. Apparently, Ray never showed her the preliminary price increase that was drawn up way back in March. Why should he, if its only purpose (at the time) was to tell McOmie what he wanted to hear?

In the second place, Pam claims that the opening fee NKL paid me reflected a mere accumulation of chargeable procedures. This is preposterous. NKL got my invoice. I never adjusted the boltwork; the boltwork worked fine. I never replaced the lock; the lock worked fine once it was repaired and plugged in. I never changed the combination; the combination worked fine. I never did anything that wasn't covered in the $63 category. The reason NKL paid me more than triple what their pricing schedule dictated had absolutely nothing to do with these extra procedures. How do I know this? Because these extra procedures were never performed and thus never invoiced!

Let's be honest, the overwhelming majority of safe openings do not require all those "extra procedures." A truly honest safeman, who would not invoice for work not performed, would receive only $63 for most warranty openings done for NKL.

In the third place, this entire line of reasoning is a red herring. It is an attempt—and a bad one, at that—to divert attention away from the preliminary price increase that was drawn up in March. Nobody at NKL ever told me that they had changed their mind and decided not to implement the increase. So it was reasonable, based on all my exchanges with NKL, to take them at their word. After all, they knew I was going to press with that information. But here was Pam, telling me that I simply "misunderstood" Mr. Lorenzo, that there was no price increase, that there was just this accumulation of charges that the locksmith can invoice, giving it the appearance of a price increase. Good grief.

July 22: Ray Lorenzo gets back from vacation and faxes me. And guess what: the

price increase is on again!!! Gawd, I have to tell ya, I feel a little like Winston Smith.

The bottom line: We operate in a semi-free market, where a business can be run any way its principals choose to run it, within the constraints of the law. Ray Lorenzo can, will, and should run NKL as he sees fit. After all, it's his company. Likewise I can, will, and should run my podunk little company as I see fit. The bottom line for me: I'll pass on doing warranty work for NKL. TNL

I didn't make any friends at NKL, but it was important to make this experience public, as a warning to my fellows. And my goodness, how you responded. In the two or three month period following the publication of this article, I received more than 40 faxes and phone calls from cracksmen relating similar experiences. But it wasn't over with this article. Ray Lorenzo wrote a scathing letter to the editor, to which I dutifully responded. Read on.

Letters

The National Locksmith is interested in your view. We do reserve the right to edit for clarity and length.

Answering "The NKL Nightmare"

This letter is in response to Dave McOmie's recent misleading article about NKL Safe and me entitled "The NKL Nightmare". Let me begin by pointing out that prior to publication, neither Mr. McOmie nor The National Locksmith afforded NKL the opportunity to respond to or comment upon Mr. McOmie's allegations and findings, a practice that's in line with objective journalism, especially where an article accuses a manufacturer of producing a defective product and of trying to "fix" prices. However, one needs only to take a look at the article headline to determine that professional reporting objectivity was replaced by a vicious, self serving, and unfounded attack on NKL.

It seems clear that the author's motive in obtaining pictures and materials for his "moonlighting" reporting job was to make NKL look bad and that The National Locksmith aided him in his endeavors by failing to confirm the accuracy and content of his article. As an executive of a company that depends on the locksmith profession as providers of an important service, consider this view that I share with colleagues and members of the security industry: Because of the nature of his work, a locksmith should hold himself to high moral and ethical standards. There is a high degree of responsibility when a locksmith is called upon to perform a service. In addition to an implied confidence in his ability, the customer places a high degree of trust on the locksmith's ethical behavior. Just as no locksmith would disclose the combination of a safe, no locksmith should pass on sensitive information meant to defeat the security mechanism of a safe upon which he works. Mr. McOmie violated our trust by authoring this article and publishing the photographs of our safe's internal mechanism without our authorization and under such unusual circumstances.

Additionally, his article denigrates the reliability and quality of our safes by alleging mechanical deficiencies. There is no truth to this allegation as our safes are reliable and are meticulously crafted and have and continue to be of the highest quality.

Additionally, Mr. McOmie's chronology of events describing his experience with our pricing structure has been manipulated for his own sensationalizing purposes. The reader of the article may immediately notice that the author was not the locksmith with which NKL contracted for the service described. In fact, Mr. McOmie was a subcontractor and under those conditions, he should have billed NKL through Gateway Safe & Lock, the original party with which NKL contracted. As is our standard operating procedure, Gateway was notified of the allowable charges prior to the assignment of the authorization number and was given opportunity to reject the work. Once Gateway accepted our conditions, they were bound to comply with our pricing requirement.

I personally authorized Mr. McOmie's invoice out of professional courtesy and only after he agreed not to service NKL safes without our consent in the future. I considered his constructive advice and suggestions regarding the structuring of our service policy and pricing, but did not agree to change them to conform with his views or set a date to make such changes as he falsely contends in the article. Eventually, certain changes (which resulted in an amount higher than the one suggested by the author) were instituted, but only after we secured enough independent data to validate these charges which resulted wholly independent of his suggestions. Unfortunately, Mr. McOmie chose to go to press prematurely. If he had checked with our company

prior to publication, he would have found out that the changes were not instituted at the time.

In 1994, NKL paid out over $1.2 million in service to over 500 locksmiths nationwide. Over 85% of that amount represented new safe installations, with the balance consisting of recurring servicing costs. This year, this figure is expected to grow by 20-30%, making our company a significant source of revenue to the profession. There is an extensive network of locksmiths across the United States that respect our association and consider it good for business. As for the rest of the profession, remember that it is their choice to determine if they want to work with NKL. However, it is also our choice to limit our association to those locksmiths that comply with our requirements and to those locksmiths we feel comfortable working with. If we offer you the opportunity to work with us and for whatever reason you decline the offer, please do us the favor of not complaining when you see your competitor reaping the rewards of our association.

Ray Lorenzo
Chief Executive Officer
NKL Industries, Ltd.
NKL Safe®

I am not used to the implication that I am immoral, unethical and a liar. But concerning Ray Lorenzo's remarkable remarks, I offer the following observations:

1. My "motive" in obtaining photos is never to make a manufacturer look bad, as even the most casual reader of my moonlit publications knows. In the Spring 1994 issue of The National Safeman I actually praised Ray and NKL for being "open-minded and fair to deal with." In the April 1995 issue of The National Locksmith, I complimented NKL on the quality of their hardplate. Mr. Lorenzo's claim of evil motive simply evaporates under scrutiny.

2. Mr. Lorenzo challenges the very purpose for the existence of trade publications and professional associations when he claims that technical articles constitute a violation of "trust." Moreover, he wants magazines to secure manufacturer consent prior to publication. In Lorenzo's world, our beloved magazines would be reduced to mere sales puffery and ads. He seems not to understand that without the exchange of technical information–most of which is far beyond the comprehension of the bad boys and some of which is beyond the comprehension of the manufacturers themselves–there would be no ALOA, no NSO, no SAVTA, and no National Locksmith. Ugh. I for one, am not about to re-enter the Paleolithic Age, where every locksmith was an island unto himself and shared his ignorance with no one.

3. It is odd that Mr. Lorenzo would accuse me of lying about the "mechanical deficiency" (the relocker misalignment) in the two safes I examined, since he wasn't there. Not only do I have three locksmiths who observed the same problem, I also know where the safes are if Mr. Lorenzo would like to see for himself.

4. Mr. Lorenzo claims that my chronology of events is incorrect, but he doesn't say where. I reviewed the dates on the faxes and letters we exchanged, and I stand by what I wrote. If Ray has misplaced portions of our correspondence, I will happily provide copies to refresh his memory.

5. Gateway Safe & Lock tells me (a) that this was an emergency situation–the safe was to be delivered ASAP; (b) that NKL quoted no price for the opening–in fact, NKL told them to "do whatever it takes' to get the safe opened, repaired and delivered on time; and (c) that the presence of these two factors is what prompted them to bring me in for the opening. Had it not been an emergency, Gateway would have used their own technicians for the opening; and had they known NKL's price, they would have refused the job. Interestingly, once they became familiar with NKL's demands, my locksmith friends at Gateway quickly dissociated themselves from NKL.

6. Mr. Lorenzo is correct when he says that no precise date was set for implementing the price increase. The implication, however, was crystal clear. In addition to our phone conversations about the increase, Mr. Lorenzo said in a fax of March 28, that he and NKL "realize that an increase is in order" and attached a revised pricing schedule for my review, asking me to let them know what I thought. Well, I did just that. I told Ray that the increase from $63 to $130 looked great, and I said so in the next issue of The National Safeman. But perhaps I am naive to take people at their word and to draw clear inferences from what they say.

7. Mr. Lorenzo never did answer my question about NKL's claim that $63 was the national average for the service call and labor to drill open and refinish a B or C rate safe. I would still like to see the data upon which that questionable claim was made, as I'm sure many readers would as well.

8. I never "agreed" not to work on NKL safes. I'll work on them. I just won't do any more warranty openings for the factory, since I value my time much more than they do.

9. Every safe manufacturer can tell horror stories of being grossly overcharged for warranty openings by a few unscrupulous and/or incompetent locksmiths. This has been a problem for a long time, and I understand NKL's desire to fix the problem by fixing the price. But in setting the price so laughably low, they damaged their credibility. And they compounded the damage by trying to pass off their lowball pricing as "the national average." We lowly service technicians may not be business geniuses, but we love our work, and we can tell the difference between a job and a snow job.

Dave McOmie

by
Dave Mc Omie

Mc Omie Vents His Spleen

(He's peeved!)

Dave discusses fair and unfair business practices.

ISSUE ONE: Overcharging For The Same Service

Guys, I am troubled by two practices some safemen are engaging in. The first is charging outrageous amounts to large commercial accounts who don't ask for a quote or an estimate beforehand. Here are several examples: In Ohio, a large supermarket chain was charged $5,000 by a safe company for opening and repairing a Diebold lug door. In Colorado, a different supermarket chain was charged $3,000 by a locksmith for opening and repairing an AMSEC square door. In Washington state (in fact, in my hometown), a fast food chain was charged $2,000 by a locksmith for opening and repairing a little Gary C-50 round door!

Those who charge these unjust, grotesque prices attempt to defend the indefensible in one of two ways. Some perpetrators tell me that the high price is justified because the job took them many days of working eight to ten hours a day. But this sorry excuse won't fly, because we should never charge the customer for our ignorance or for our on-the-job training. Gawd, I can't believe anyone would disagree with me on that point.

Other perps try to defend their rip-offs by weak appeals to "the free market." A prominent writer in our industry, (who won't engage with me in public on this issue) uses just such a defense: "Hey man, the sky is the limit, and if they pay it, then that is its own justification—the market has spoken."

Oh c'mon. That isn't a defense so much as a thinly disguised search for a deep-pocketed client. The Ma and Pa Corner Market can't pay five grand, but Safeway can—so let's rip off Safeway? Can those of you who do this sleep at night with a clear conscience? Really? (This practice is to be sharply distinguished from giving a price break to the sweet little old lady who lives on a fixed income. I hope everyone can discern a difference between giving someone a break and giving someone the shaft—the difference, of course, being as obvious as that between altruism and greed). Those who disagree, keep reading as we move on to a slightly different problem. See if you can formulate a response to the examples I am about to provide.

The second practice that bothers me is charging customers drilling prices for doing simple troubleshooting. I have heard safemen boast of getting $500 for holding a loose dial ring steady and dialing the combination. "Easiest danged money I ever made" they say with a proud grin.

Many times I have objected to this practice, which I consider grossly unethical, and many times I have heard the same tired old rationale:

Look Dave, I gave them a firm price, and told them that it didn't matter whether it took me two minutes or two days, or whether I dialed it or drilled it—the price was the same. They appreciated the fact that I didn't dance around saying it might be this much or it might be that much. The bottom line is that I gave them a firm price for opening their safe, they accepted, I did the work and they paid. Everybody is happy. So what's the problem?

Some people honestly don't see the problem. I could talk about it in the abstract language of ethical theory until I am blue in the face, and they still wouldn't see the problem. So let's take a different route and try a couple of analogies. Analogies are deceptive if they contain serious points of disanalogy, but can illuminate subtle points if they don't. Judge for yourself whether these are apt.

Imagine taking your car into a repair shop and being charged the price of an engine rebuild for having a spark plug replaced. When you object, Mr. Bad-Wrench smugly says, "Hey dude, you accepted my price to fix your car. I told you that it would be ready at 5:00 no matter what. Well, it's 5:00. I kept my end of the deal—your car is fixed. And now I want my bucks. So pay up duuude."

Imagine feeling deathly ill and going to a doctor, who in due course charges you a thousand dollars for shooting your derriere full of penicillin. When you object to the price, the doc says, "Hey, you are not paying for my time, you are paying for my knowledge. Whether I used a scalpel or a syringe, the price is the same and so is the end result—you are cured. So pay up."

Would you feel ripped off in either of these scenarios? Of course you would, and rightly so. We want there to be some kind of relationship, even a loose one, between the skill and time required to perform a task, and the amount we are charged for it. And here is the point: if you would feel ripped off in the above scenarios, but still want to argue that it is okay for you to charge drilling prices for simple troubleshooting, then you need to justify holding the doctor and the auto mechanic to one standard, while holding yourself to another.

There is a large gap between replacing a spark plug and rebuilding an engine. One requires much more skill and time to perform than the other. Thus we can reasonably expect to be charged more for a rebuild than for a spark plug.

There is a large gap between giving a shot and removing a gall bladder. One requires much more skill and time to perform than the other. Thus we can reasonably expect to be charged more for surgery than for a syringe.

There is a large gap between oscillating the dial in the contact area and drilling at drop-in. One requires much more skill and time to perform than the other. Thus we can reasonably expect to charge more for firing up the Hornet than for diddling the dial.

Conversely, the mechanic who replaces a spark plug should not charge as if he rebuilt the motor; the doctor who injects you with an antibiotic should not charge as if he performed surgery; and the safeman who wiggles a dial to open a safe should not charge as if he drilled it.

Are there exceptions? Yes, I see two valid exceptions. The first is going on a very long service call; the second is doing first-rate troubleshooting.

When I fly cross-country to open a high-security safe (which I am doing less and less often, now that there are more and more qualified safemen) I am usually satisfied that the safe is not going to be rattled open, because I have already talked the customer through adding and subtracting numbers, pounding on the door, and oscillating the dial in the contact area. But if I were to arrive and rattle open the lock, I would feel completely justified in charging full ticket. Why? Because of the time investment. I have just flown all day to get to the job site, and will be spending another full day flying home. With the job sandwiched in the middle, this means I am out of commission for two to three days for one job. If the customer were to luck out and get the safe open while I was en route, I would save a couple of hours of drilling time, but the two travel days are inflexible. I might cut the customer a slight break, perhaps the amount saved in drill bits, but that is about it.

The second exception is when a first-rate troubleshooter spends an inordinate amount of time dialing a safe open. Sometimes this is done because the customer really doesn't want his safe drilled, and sometimes it is done on a safecracker's hunch. We have all been there. If there is a serious enough malfunction in the safe or lock that takes an hour or more for an expert to troubleshoot open, then that is fair game, because most of us would have drilled it anyway.

So how do I charge for simple rattle-opens? I charge exactly half what I would have charged to drill the safe open. It strikes me as the perfect compromise. I can be up front with every customer by giving them a drilling price, and informing them that if I get it open with simple troubleshooting techniques, the price is cut in half. The customer understands exactly what is happening, and even a blockhead like me can do the math. Waddya think? Is this the perfect solution or what?!

ISSUE TWO: Charge Less for Manipulation? No Way!

The previous issue—charging drilling prices for simple troubleshooting—was about over-charging. This issue is about under-charging. I am amazed to hear safemen say that they have one price for opening a safe by drilling, and another, cheaper price for opening a safe by manipulation. Why bother to learn such an advanced skill if you are going to lower your price? It's not as if manipulation is a great time saver. A competent driller will beat the pants off a competent manipulator three times out of four. The primary advantage of manipulation has little to do with the opening and more to do with the repair—there is no hole to patch, no dial to replace, and a complete tear down of the lock can usually be avoided.

Most of us who flat-rate real openings usually don't differentiate between manipulation and drilling. [Simply put, a real opening is one where the safe is opened without a customer- or factory-provided combination.] In lost-comb situations, we often flat-rate the opening and the repair. But for those safemen who want there to be some difference between drilling and manipulation, I have a suggestion: Charge exactly the same for opening a safe by drilling as by manipulation, but let the difference in the total bill be reflected in the repair charges. In the case of manipulation, the repair charge will be limited to inspecting and lubricating the lock and perhaps setting a new combination. In the case of drilling, the repair charge will include the above plus labor and materials to patch the hole and repair or replace the lock. So you see, there can be a price difference between drilling and manipulation, a difference that represents the actual work involved and doesn't require you to sell yourself short.

ISSUE THREE: Is U.L. a Dinosaur?

Most of us go about our business without thinking much about the institutions in our industry. We are too busy changing safe combinations and chucking up Strong Arm bits in our Bosch drills to stop and ponder weighty questions with questionable relevance to our everyday lives. But I beg your attention for two minutes—the time it will take to read the remainder of this editorial. The questions are simple, and concern a well-entrenched institution—Underwriter's Laboratories.

Has U.L. gotten too big for its britches? Is U.L. really competent to test safes and safe locks for burglary resistance? Is the motivation behind the recent spate of changes and proposed changes a genuine desire to improve the construction of safes and safe locks, or is it simple revenue enhancement?

As I look over the work done by U.L. in recent years, I am utterly underwhelmed. Without consulting any keylock experts, they granted labels for pick-resistance to keylocks that can be picked or decoded in a matter of minutes. They granted labels to electronic locks that can be spiked open in seconds. They granted labels to vault panels made of wood (no joke!), which are causing problems all over the country. I honestly believe a group of NSO members picked at random could do a more thorough job of testing than U.L. has done.

As I talk to burglary investigators, insurance representatives, and safe dealers and manufacturers, all of whom report decreasing numbers of safe burglaries, I am curious as to why U.L. is proposing all the modifications—many of which seem to be without rationale or support from within or without the industry. U.L. claims to seek and value input from "safe manufacturers, the Burglary Protection Council, and broad consumer groups," but if the input runs counter to what U.L. wants, it is ignored. It appears that yes-men are valued, dissenters are not.

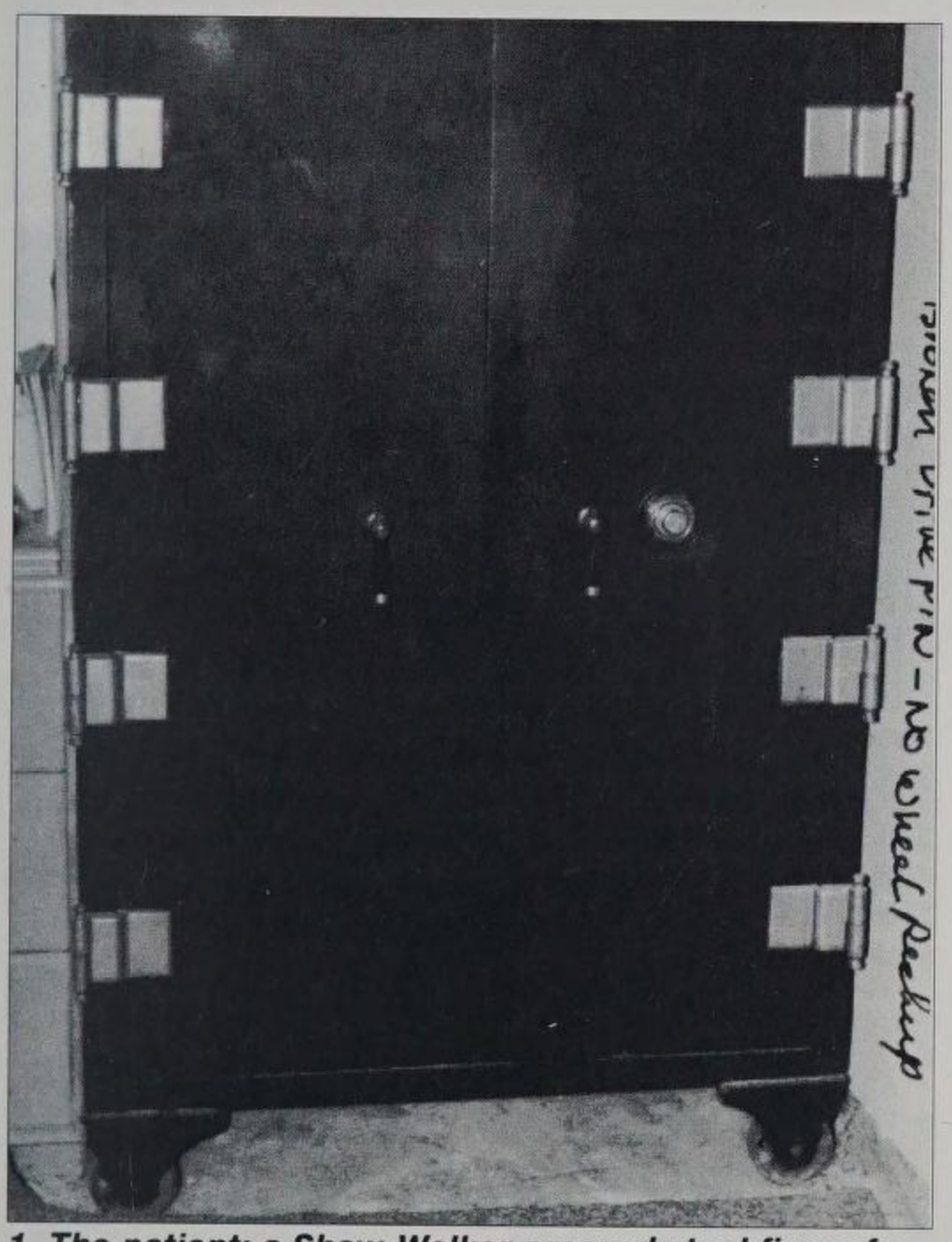
In future months, I will be tossing several more issues into the ring for discussion. But right now I want to hear from locksmiths with opinions on these issues. I don't care whether you agree or disagree with me, I want to hear what you have to say. Write or fax me at your convenience. Dave McOmie, 4549 NW Trout St., Camas, WA 98607, FAX: (360) 834-0205.

Note: Ma Bell has just given me a new area code. If you have recorded my fax number from previous articles, be sure and note the new area code. TNL

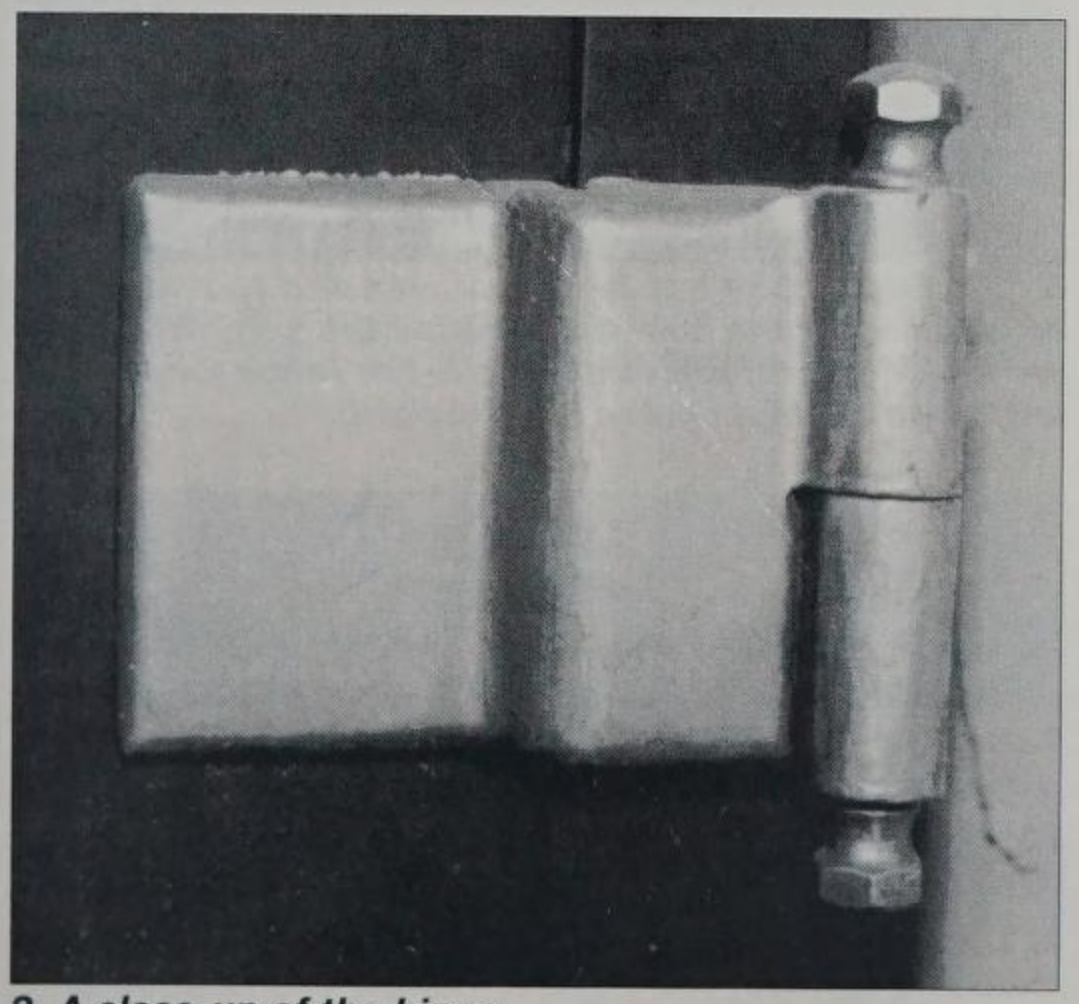
Issue one came from the NKL experience. During my chats with Ray Lorenzo, I was forced to acknowledge the issue of overcharging. NKL made a mistake in fixing their prices too low, and their pants were on fire when they claimed that $63 was the national average for the service call, opening and repair of a B rated safe. But NKL was right that some locksmiths charge unconscionable fees. In the interest of fairness, I felt obligated to point this out and to argue against several practices that I found (and still find) unethical.

Eagle, Shaw–Walker And Spenard

An auto-dialer may be great for some applications, but not when the lock's not working.



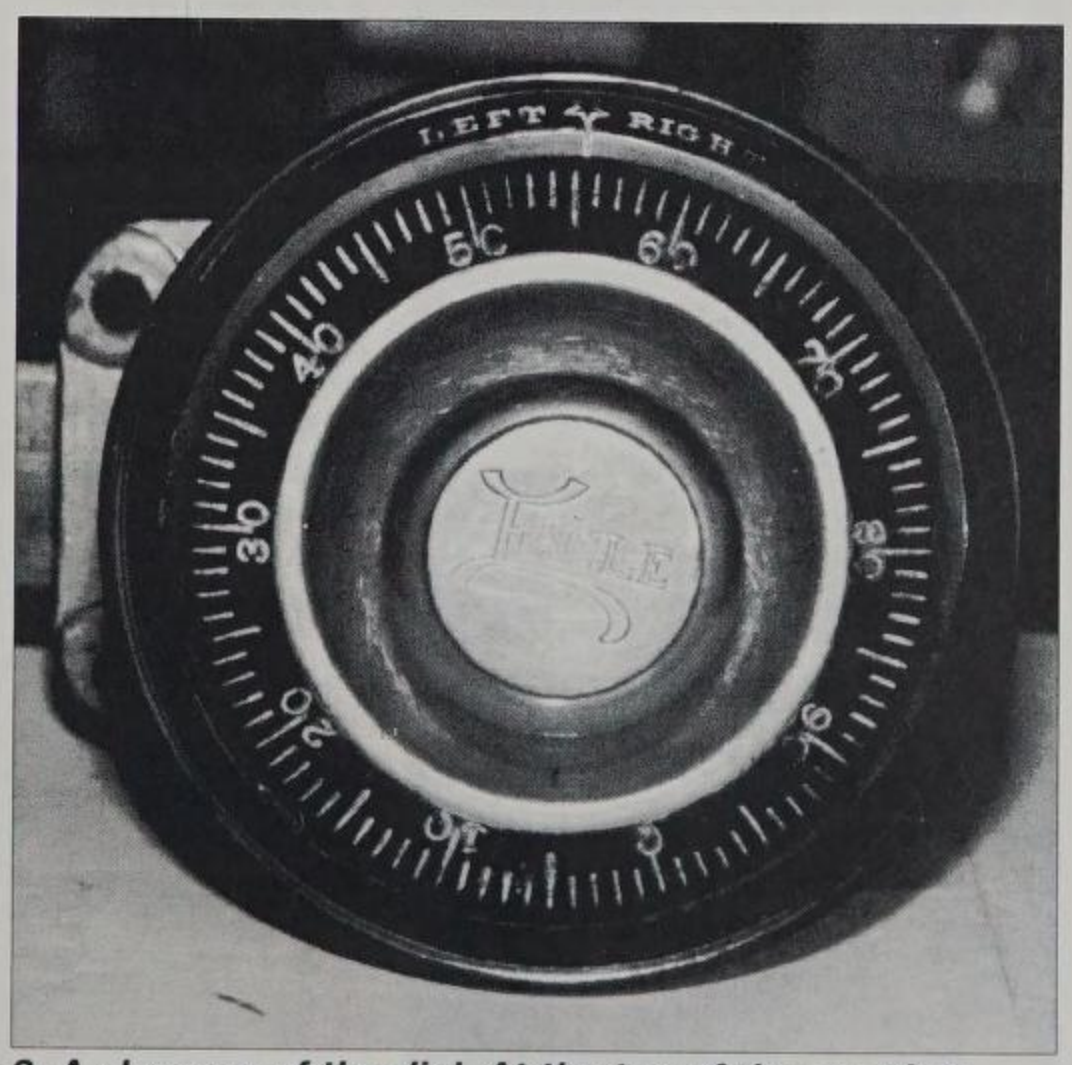
1. The patient: a Shaw-Walker pressed steel fire safe, with Eagle dial. The symptoms: no wheel pick up.



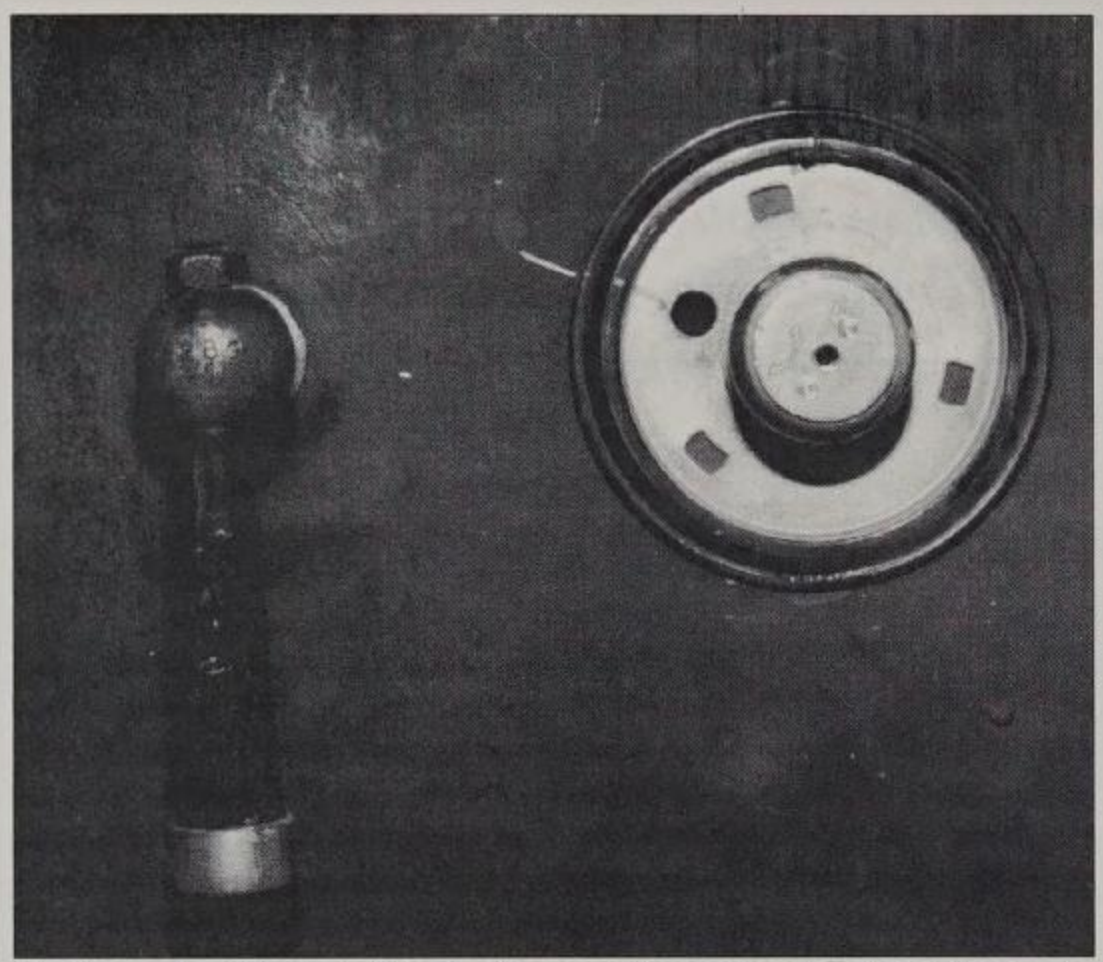
2. A close-up of the hinge.

by Dave Mc Omie

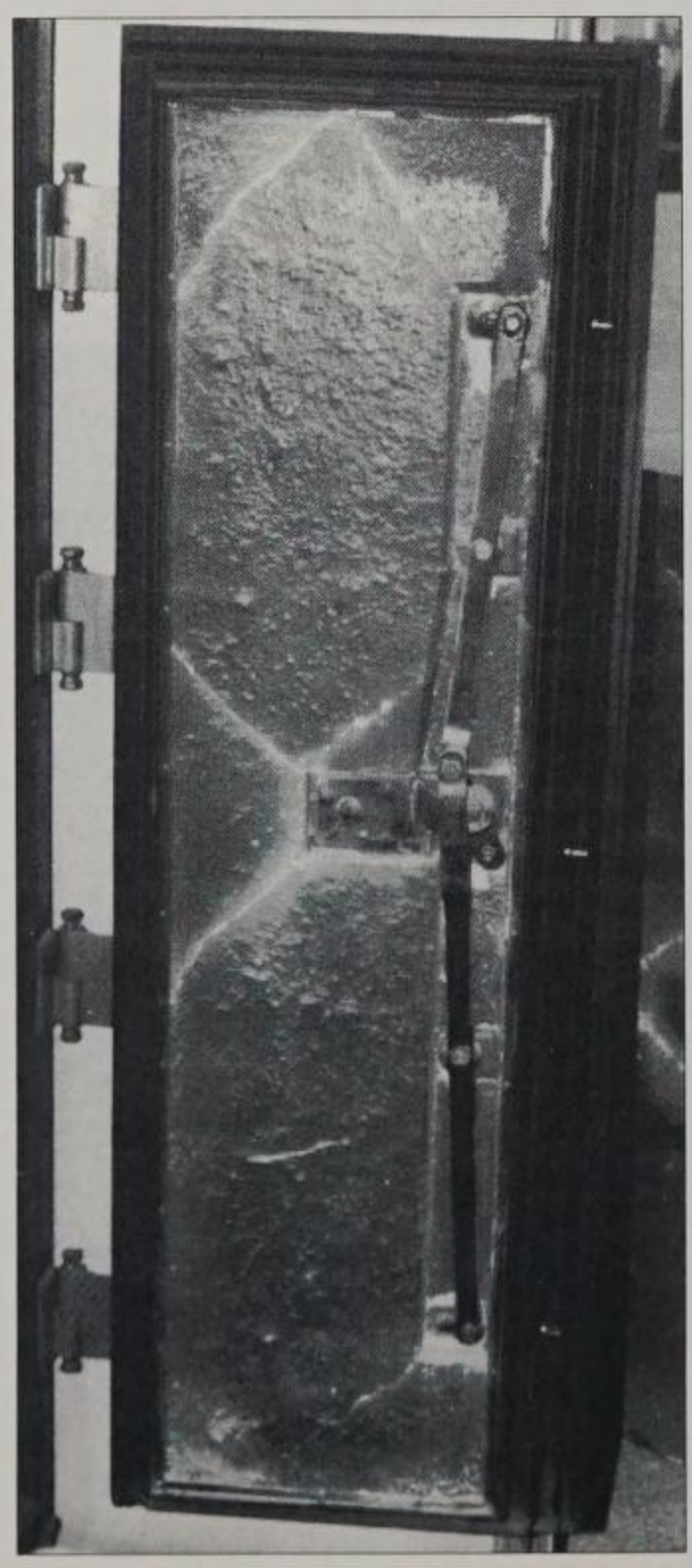
When the automatic dialer hit the market, some of us in the business of opening safes promptly panicked. Ohmigod, safe companies, locksmiths and key cutters will no longer need our services, because they will go out and buy an auto-dialer! Well, when the paranoia subsided and rationality set back in, we realized the obvious: that the auto-dialer is useless in all cases of malfunction, and almost all cases of burglary. And even in cases of lost combination, the dialer has a success rate of 50 percent at best. Recently, my good friend Don Spenard had to bail out an auto-dialer. A locksmith friend of Don's had purchased an auto-dialer, and put it on a customer's Shaw-Walker fire safe that wouldn't open on the combination. The fact that the customer had the combination apparently didn't register, but after the dialer had been on for two days, it occurred to the locksmith that he might have to call for help. When Don arrived, he spun the dial and could tell instantly that no wheels were picking up. Most likely the problem was either a broken drive pin on the drive cam or a broken fly on wheel number three—in either case, the auto-dialer was utterly impotent (yes!). The following photo story will tell the gleeful tale of man's superiority over machine.



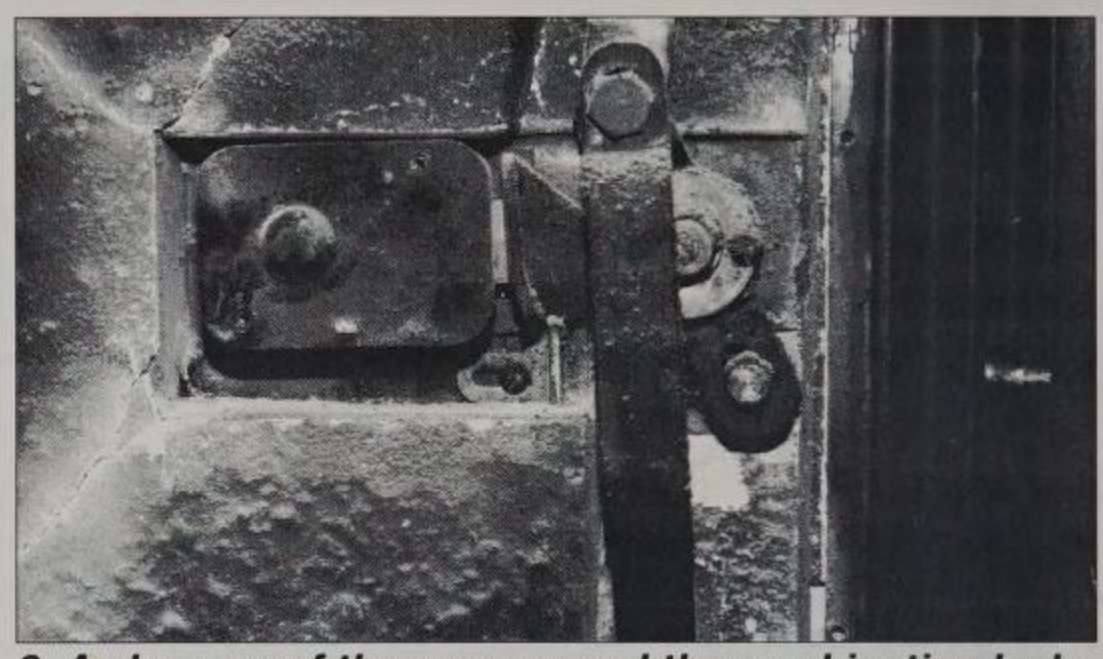
3. A close-up of the dial. At the top of the opening index is a star, similar to that used in yesteryear by S&G.



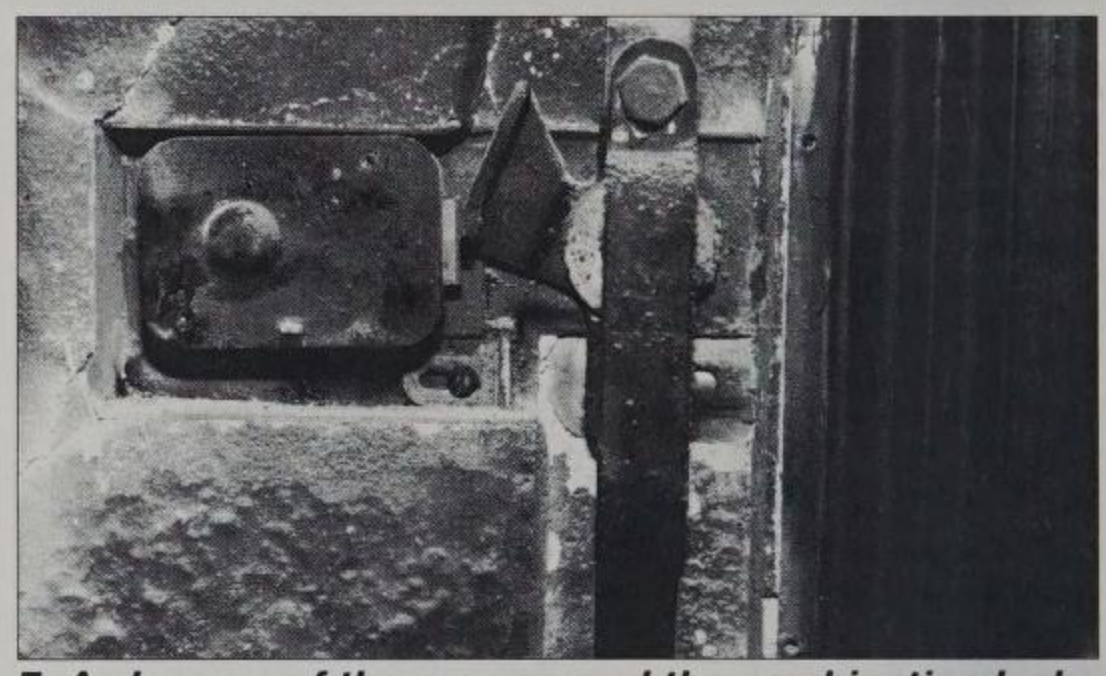
4. Faced with this kind of a malfunction in this kind of a lock, the usual course of action is to defeat the boltwork, by drilling for and punching back the handle cam. But this Shaw-Walker (like its Meilink look-alike) has a wrap-around handle cam that is extremely difficult to punch. So Don came up with an alternative: he used a hole-saw to remove the numbered portion of the dial, and then drilled right at drop-in. Don was able to probe the wheels around using an ice pick, and since the Eagle 2089 is a rear-drive lock, the wheels lined up in order, 1-2-3. When all three wheel gates were lined up under the roller fence, Don rotated the dial knob to the right until it retracted the lockbolt. The Shaw-Walker was open.



5. A look inside the Shaw-Walker. The boltwork is simple: there are three locking bolts, all on the opening side, and a RH-mounted combination lock. Jeez, that boltwork looks like Meilink's. All right, all right. Did Shaw-Walker make safes for Meilink, or did Meilink make safes for Shaw-Walker? If anyone knows for sure, please drop me a line.



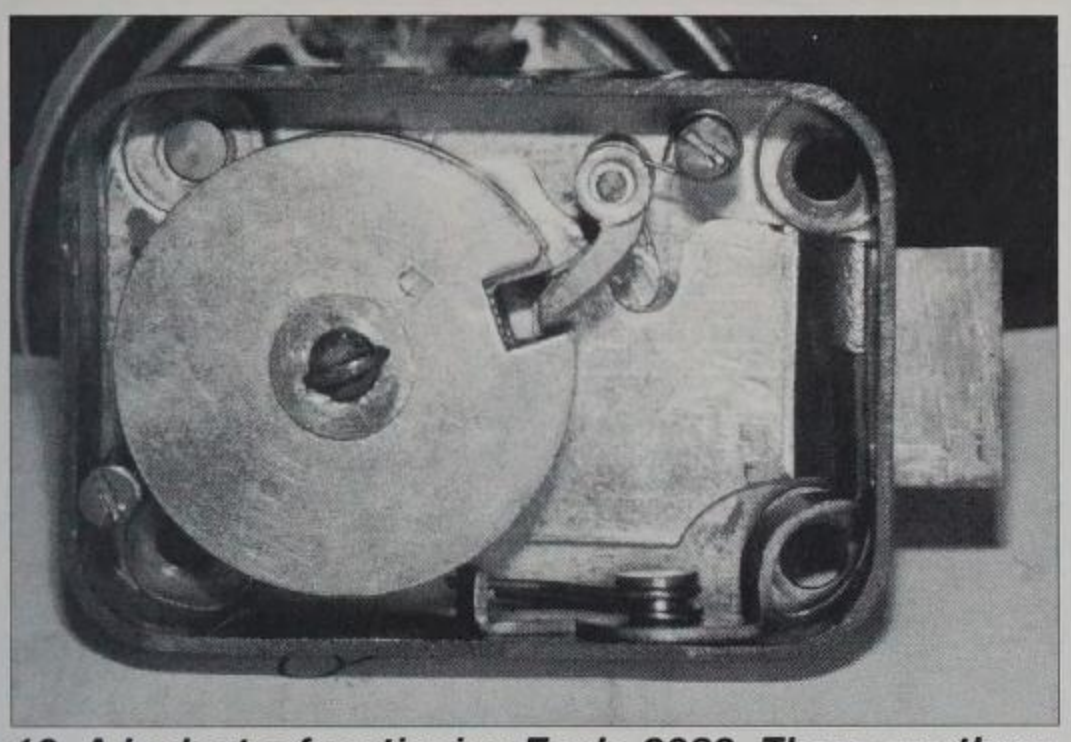
6. A close-up of the area around the combination lock and handle cam. The boltwork is extended.



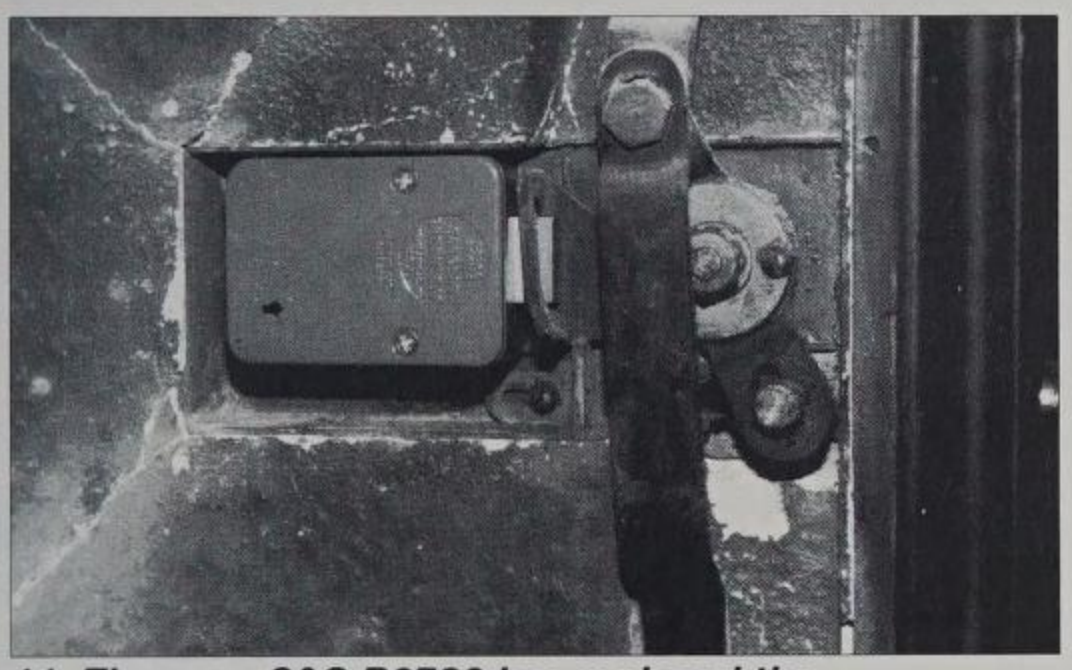
7. A close-up of the area around the combination lock and handle cam. The lock is unlocked and the boltwork is retracted. There are no external relockers in this door, but there is an external relocker in the lock.

8. The Eagle 2089 has been removed and turned over so we can see the hole that opened the safe. What we are looking at through this hole is the fence (on the left) and the wheel gates (on the right).

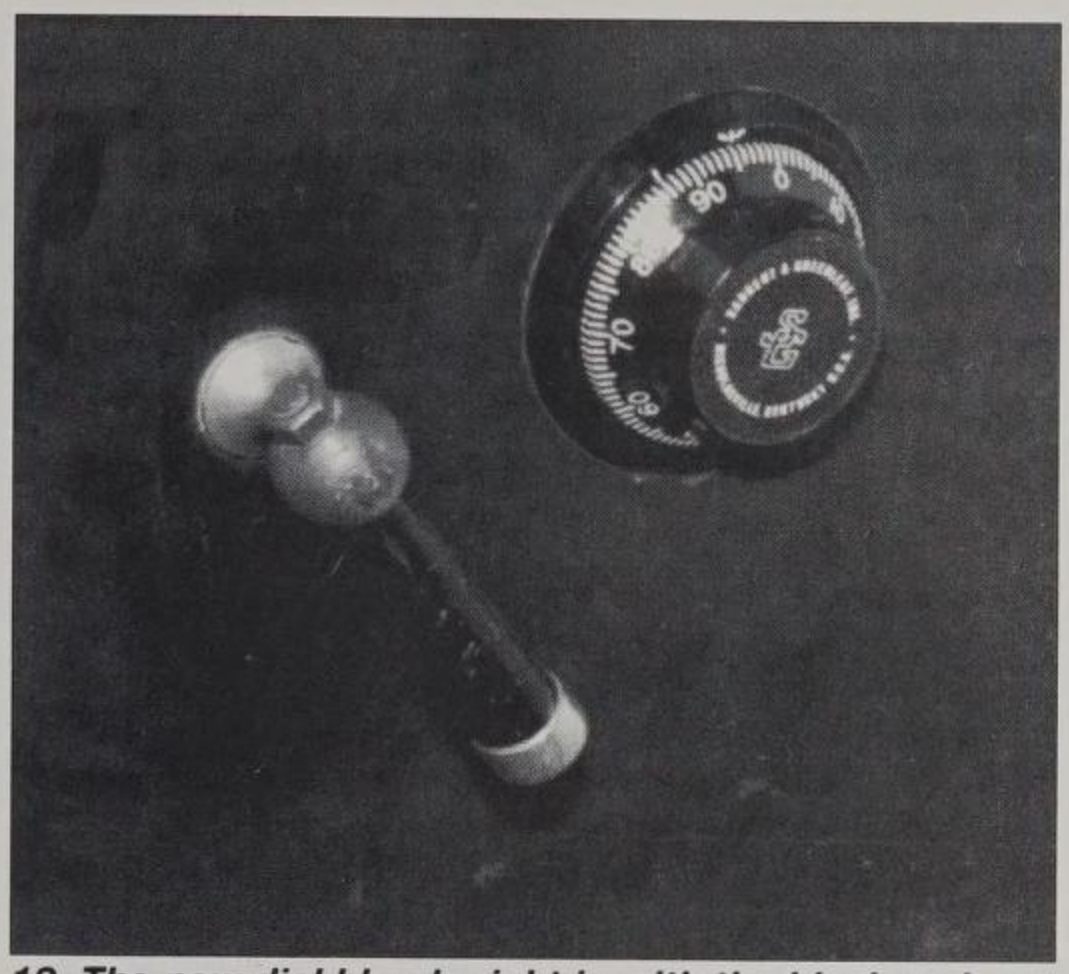
9. The parts to be replaced. From left to right: dial knob and spindle, dial number flange, dial ring, back cover, drive cam, lock body, tube nut.



10. A look at a functioning Eagle 2089. There are three 1-7/8" wheels and a rear-mounted driver. Drop in (the fence location) is at approximately 80.



11. The new, S&G R6730 has replaced the malfunctioning Eagle lock. In this angled shot, we can clearly see how the handle cam wraps around the lockbolt, which makes it almost impossible to punch. (I did it once, but gawd was I lucky).



12. The new dial blends right in with the black and silver handle. Good job, Don!

TNL

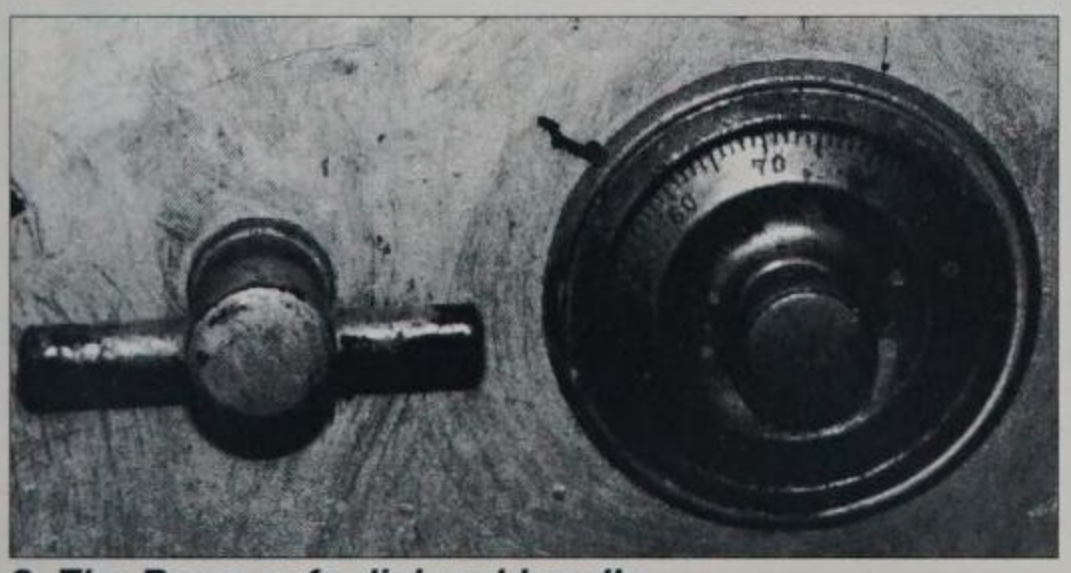
The Police Baum

By Dave Mc Omie

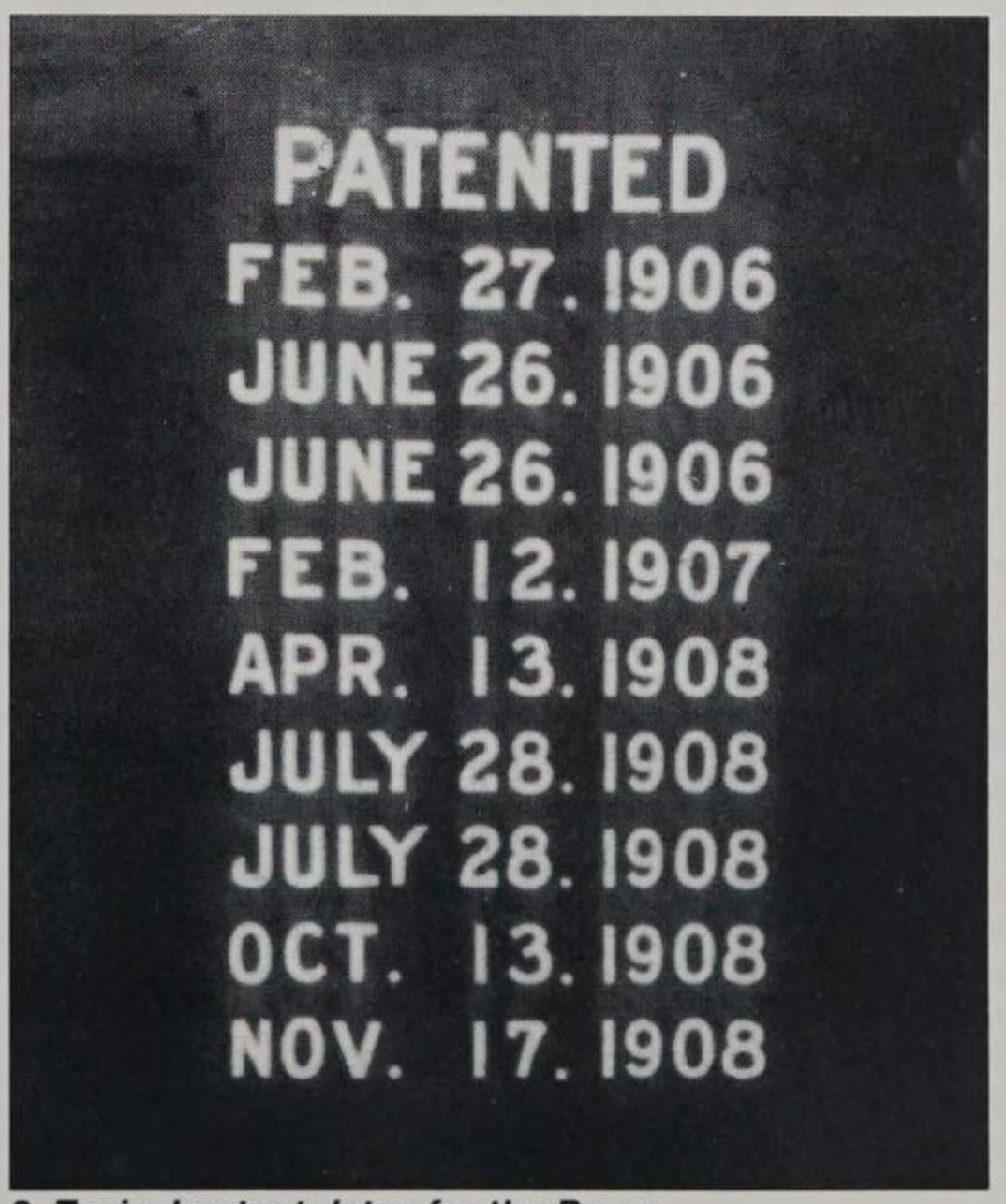
DAVE OPENS A WELL KNOWN SAFE THAT HOLDS A FEW SURPRISES.

When the police need a safe opened, more often than not, it is during a drug bust. Many of us have done a zillion openings for the DEA, IRS, and local law enforcement agencies. And when my local police department called about having a safe opened (they got my unlisted and unadvertised number from a local locksmith) I figured it was the same old thing. But it wasn't. They needed their safe opened. They had gotten it from gawd knows where, and it was locked. Would I please come open it for a reasonable price? Of course. I am very reasonable.

1. Chief of Police spinning the dial to a reluctant safe.



2. The Baum safe dial and handle.



3. Typical patent dates for the Baum.

I haven't always been reasonable to The Law. One time I was downright rude. Here is why: I was called out by a certain arm of the government to open a safe at a motorcycle club on the rough side of town. They suspected boo-koo drugs. So I drove to the jobsite, walked in, and saw the suspects all handcuffed, sitting on chairs. Sometimes, if the suspects are not handcuffed, it is difficult to tell the plain-clothed undercover good guys from the bad guys. But this time it was easy, and not just because the suspects were already cuffed and sitting. It was also because all the good guys were wearing ski masks!

I followed the head honcho and his right-hand man into the next room where the safe was. My head was spinning a little at the surprise. I had done dozens of jobs like this, but never was my face the only one exposed to the bad guys.

"What the hell is going on" I asked in a slightly distressed tone.

"Oh, we are protecting ourselves from reprisals by these a . . holes" replied Honcho. "We don't want to be recognized at Safeway when they get out of jail, because these jerks have a long history of carrying grudges."

I was stunned. And speechless. And very pissed off. "That's nice" I said, "but what about me? Why the hell didn't someone tell me?" Now it's my pretty face that will be remembered!"

I was so angry that I just about walked out. But I couldn't. Call it macho safeman pride, call it foolishness, but I just had to open the safe. So I did. And so far, I haven't seen any of those characters in Safeway. Knock on wood!

Anyway, back to the current job for the local police. I showed up at the station, and was escorted back to the safe. The Chief showed up long enough for me to snap his picture spinning the dial. *(See photograph 1.)*

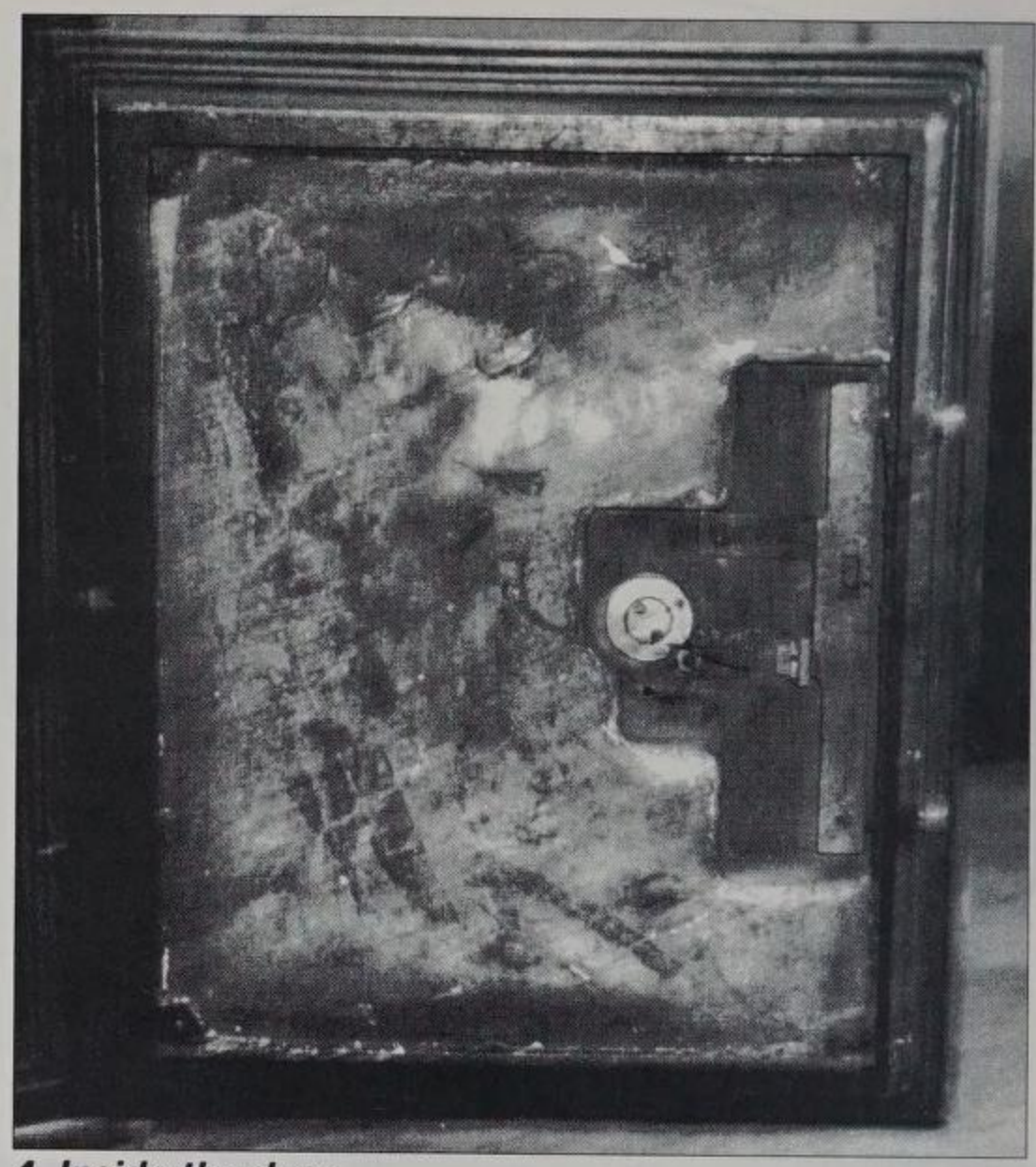
I recognized the safe instantly as an old cast-iron Baum. One easy way to identify a Baum is by the handle and dial. Many (but not all) Baums used a flat-faced T-handle and a unique dial, similar to those shown in photograph two. (For a more detailed look at the dials and handles used by Baum, see Volume four of my safe opening books).

This was going to be an easy one. No hardplate, no lockcase, no horsing around, just wham, bam, thank-ya-ma'am and I'm outta here.

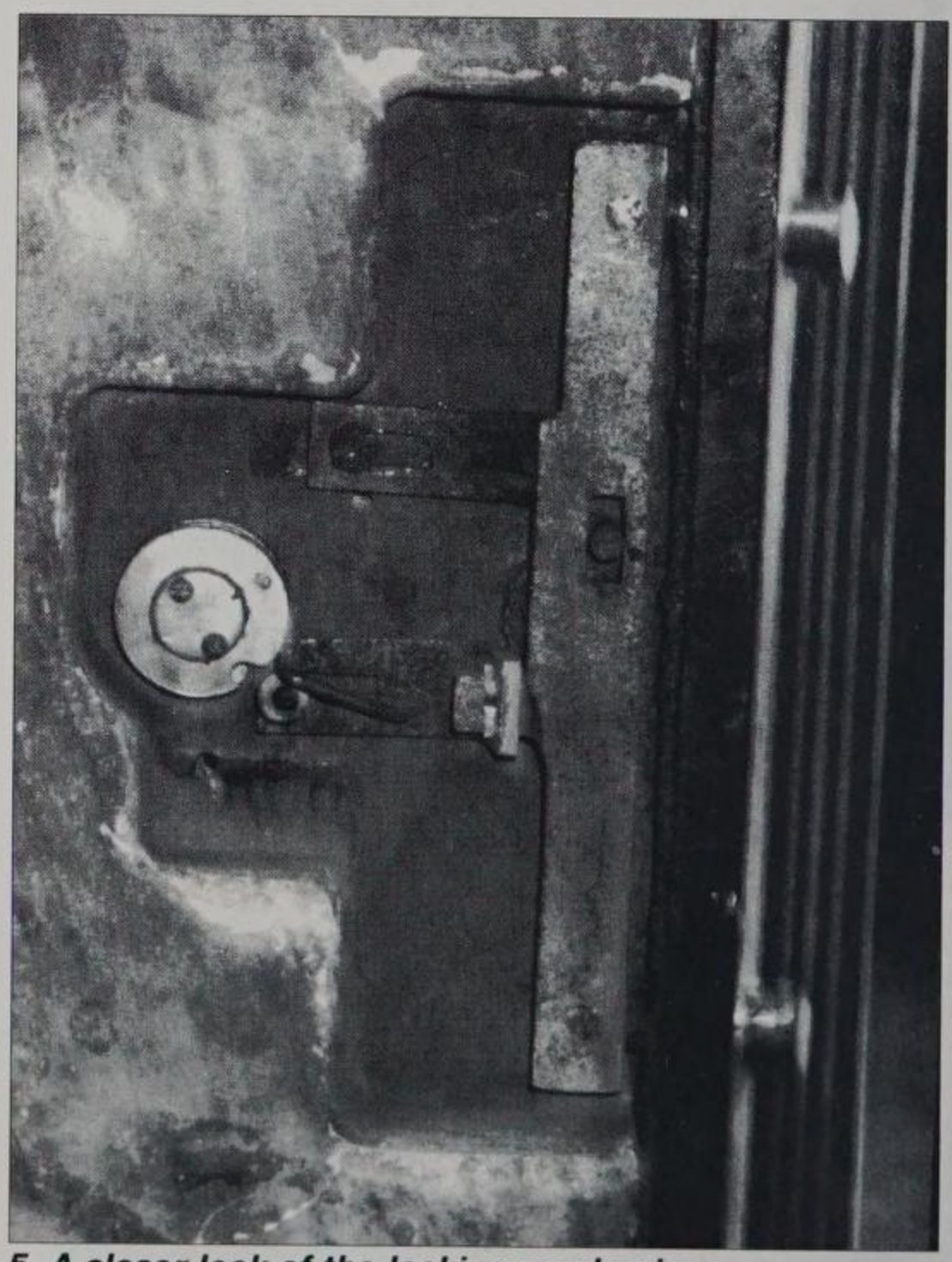
Yeah, right. When am I gonna learn?

I popped a hole outside the dial ring at about 80, expecting to line up the wheels gates and transfer them around to drop-in. Well, the first part went off without a hitch. I drilled a 1/4" hole through the mild steel outer skin, through the insulation and through the inner skin, and stopped. In the hole went trusty old Olympus. The wheel gates were lined up, and then I transferred. And transferred. And transferred some more. But the dadgummed fence would not drop in.

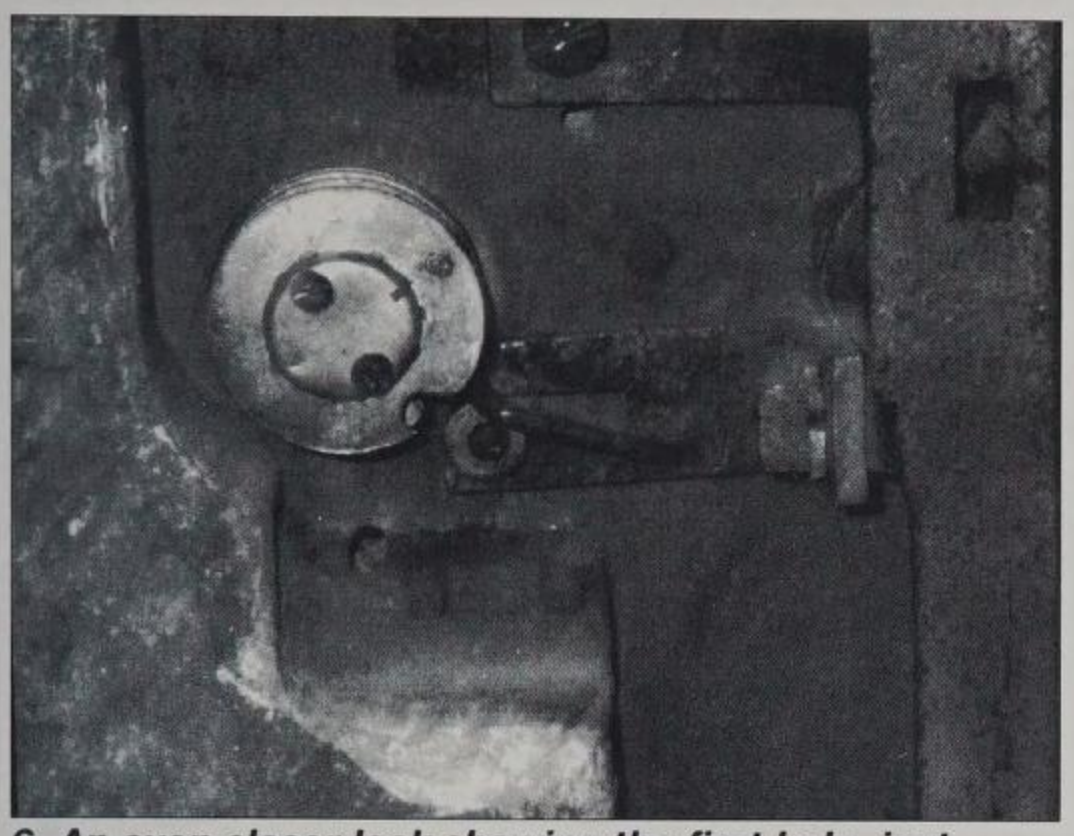
Time to think. I could tell by the look of the wheels that this was the regular old Baum lock, just like the one on pages 22 to 25 of Volume four. This is a simple lock—when the wheel gates are lined up at drop-in, which is at about 50, the dial is rotated back to the right, and then the fence—which is actually a weighted bar, similar to that used in a Yale OB—drops into the driver gate, causing the dial to come to a stop at about zero. The handle may then be



4. Inside the door.



5. A closer look of the locking mechanism.



6. An even closer look showing the first hole, just below the bolt work, and the second hole below the wheel pack.

thrown to retract the boltwork.

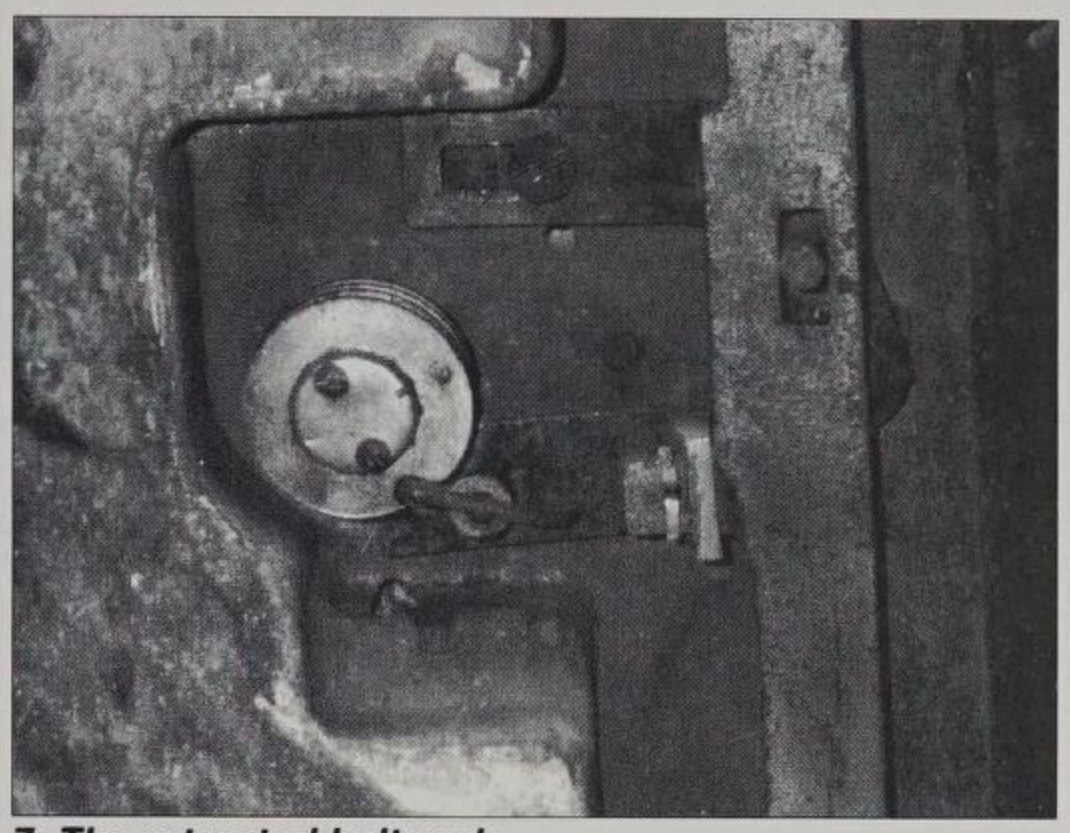
"So what's the problem?" I asked myself.

I stuck my scope back in the hole and looked around for any hint of a problem. As I looked to the side of the wheels, I noticed what appeared to be a small piece of round stock that certainly didn't belong in this lock. Then I noticed (about time!) that I could not see any sign of a weighted bar. What the heck?

After a few more minutes of frustration, I decided to put another hole in this bugger, this time right underneath the drop-in area, so I could have a good view of what the problem was. So I drilled another hole, this time right outside the dial ring at 50.

When I stuck my scope in and looked directly up, I saw nothing but the wheels! There was no sign of a weighted bar or lever or fence or anything. Then I looked off to the side and saw that little piece of round stock. It had a bend in it that projected across the wheels at about 70 on the dial. And then it hit me: this old Baum had been modified. I lined up the wheels gates with the bent piece of round stock, and then lined up the driver gate. I realized that, unlike the dial on a normal functioning Baum, this one was not going to come to a stop. Like Herring-Hall-Marvin's HE, and like Mosler's #10, the handle had to be thrown to force the fence into the gates.

Sure enough, that is exactly what happened. Once all the gates were aligned with the round stock/fence, I threw the



7. The retracted boltwork.

handle and the boltwork retracted. Finally!

Photograph three shows the traditional patent dates that you will find on many Baums of this era.

Photograph four shows the inside of the door with the back panel removed. As we can see, there are two locking bolts, both on the opening side. There is a single deadbolt on the hinge side to prevent the door from being shoe-horned open from the hinge side.

Photograph five takes us in for a little closer look (don't worry, we'll get even closer!). Boltworks don't get much simpler than that.

Photograph six takes us in for a close-up of the area around the lock. Notice my first hole, above and to the right of the wheels. I almost hit the guide bar! My second hole can be seen about 1" below the wheels. In this photo, the boltwork is extended. The wheel gates have been lined up, and I am bringing the driver gate around.

In photograph seven, the driver gate was lined up, and then the handle was thrown, which forced the round stock/fence into the gates as the boltwork retracted.

I don't know what happened way back when, but somewhere along the line, somebody removed the original weighted bar and replaced it with this little piece of round stock. Talk about being thrown for a loop!

The Lesson: To paraphrase Yogi Berra, it ain't open 'til its open! TNL

The local cops haven't called me since. My apparent incompetence must have made an impression. I mean, who needs more than one hole in a Baum?

THE GARY/MOSLER

There once was a fast food chain that placed a rather large order with a prominent safe manufacturer. The order was so large that the manufacturer had to enlist the aid of another manufacturer to get the order filled on time. The result: a hybrid, or cross-breed that confuses locksmiths and safemen whenever they see it.

Examine the safe in photograph one. It has Mosler's name all over it, but can you find it in any of your Mosler literature? No. Can you find it in the Mosler section of any of my (or anybody else's) books? No.

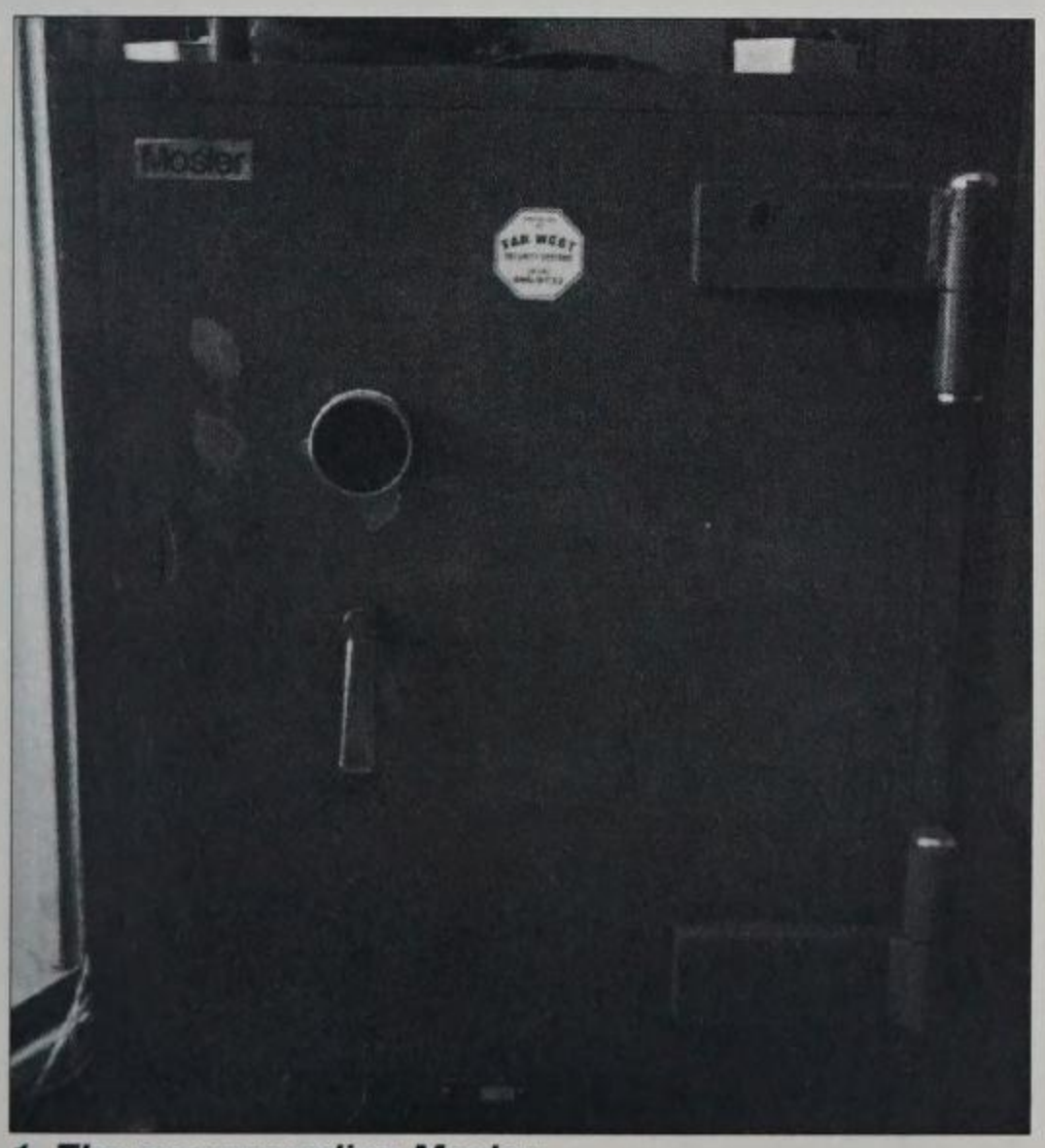
Why not? The simple answer is: because it ain't a Mosler!

Photograph two takes us inside. This should look a little more familiar. It is the inside of what we know as an old-style Gary square door. Go ahead, look it up. There are three locking bolts on the opening side, and no locking bolts on the hinge side, top or bottom. On the hinge side there are three deadbolts, designed to prevent the door being opened by having the hinges cut and being shoe-horned open from the hinge side.

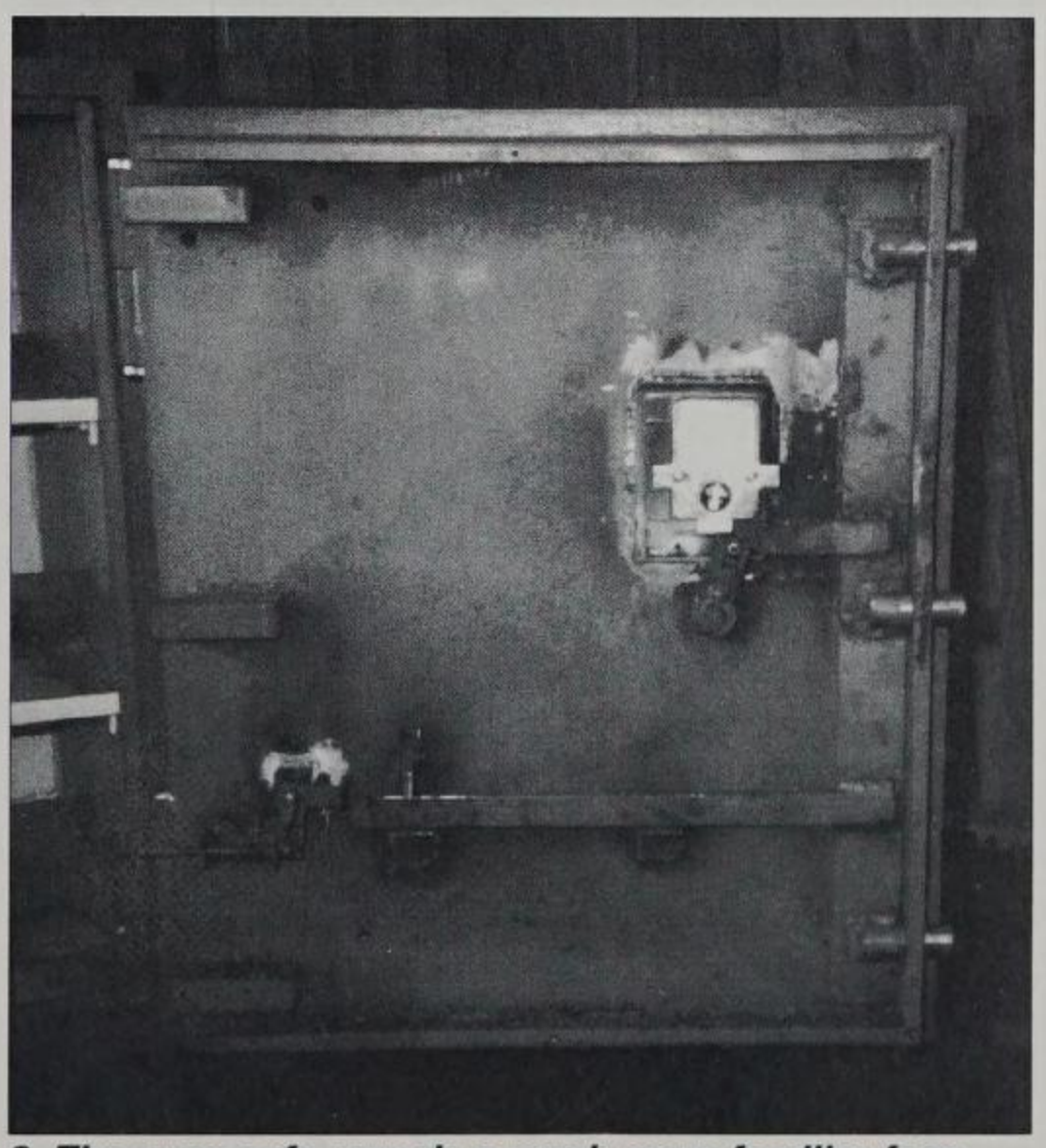
When this safe left Mosler's hands, it more than likely had an MR302 lock in it, but it has been modified in the field. It now has a LaGard 3330, mounted vertical down, of course. The external relocker is inside that long rectangular housing that sits right along the left side of the lock. *(See photograph 3.)*

A digressive word of advice: if you are making a through-the-door attack on a 16" tall or taller old-style Gary square door, and if you are drilling and punching your way through the Maxalloy, be careful not to get carried away with the hammer and punch. I caused myself a lot of grief once (and only once) when I was showing off to a locksmith who had called me. He had spent all day fighting the Maxalloy, and I was going to show him how the Great McOmie could fly through the stuff in minutes.

So I grabbed my best punches (this was long before Lockmasters introduced their even better hardplate punches) and my three-pound hammer. BAM, BAM, BAM, BAM, BAM and I was through the hardplate in under five minutes. Drilled into the comb-lock, lined up the wheels



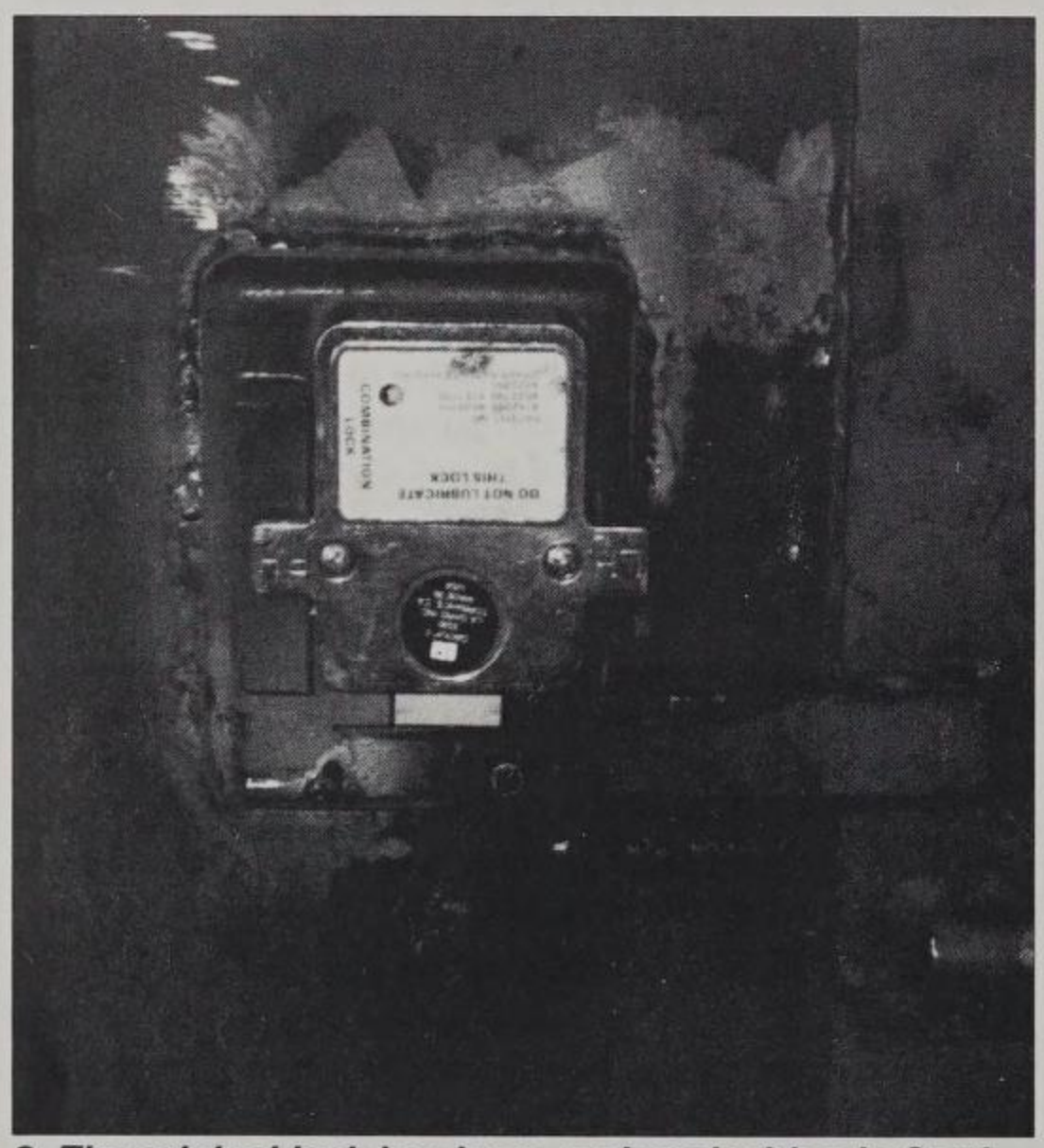
1. The masquerading Mosler.



2. The open safe reveals a much more familiar face.

By Dave Mc Omie

A MOSLER... UH, NO, A GARY... NO, UH, IT IS A MOSLER...A GARY...A MOSLER... READ ON AND HELP DAVE DISCOVER THE MAKINGS OF THIS HALF-BREED.



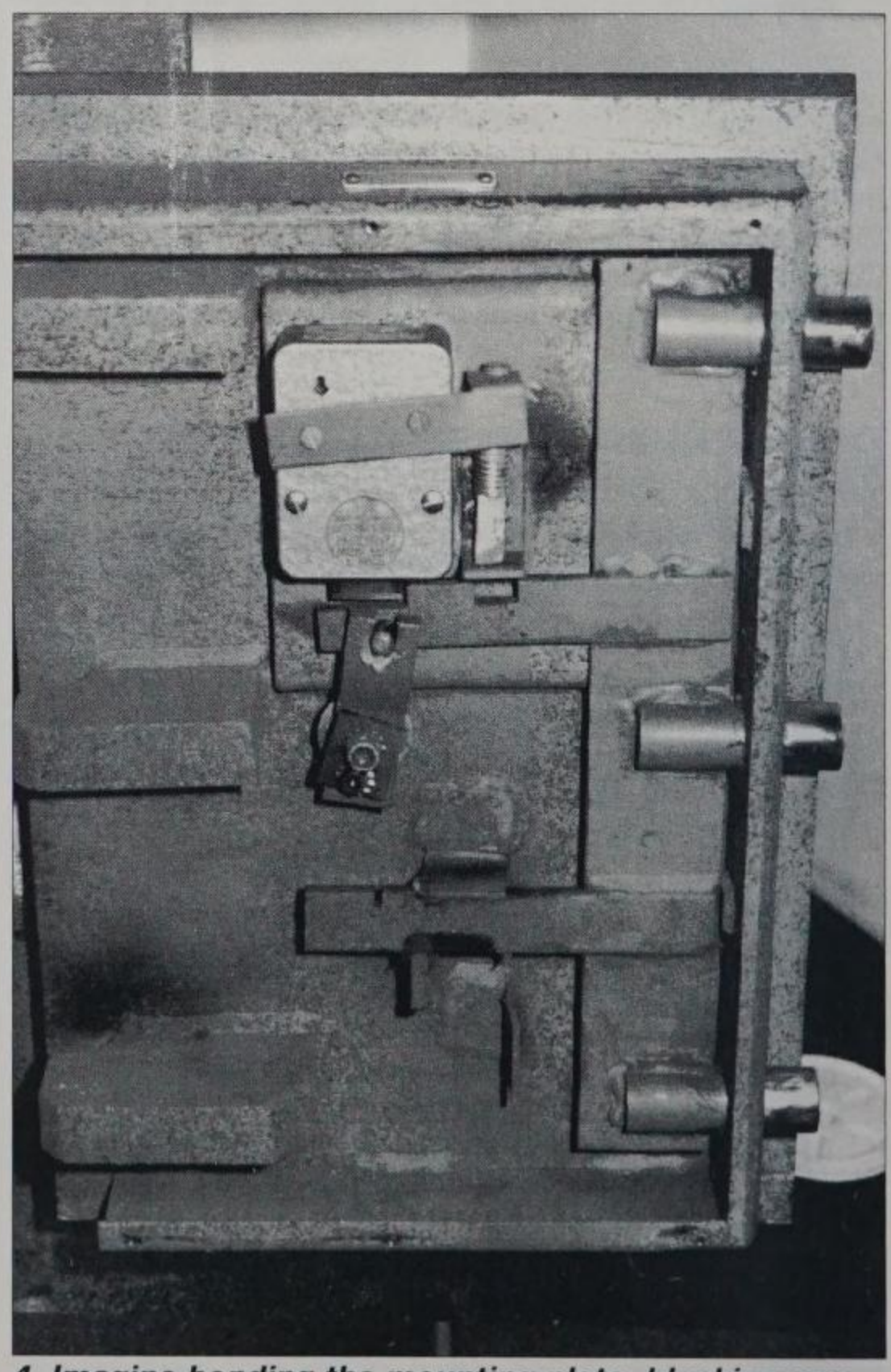
3. The original lock has been replaced with a LaGard 3330.

gates, and opened the comb-lock. Smiling like a champ, I swaggered over to the handle and gave it a tug. It wouldn't budge. Not even a micron.

Oh gawd, what had I done? Well, what I had done was ugly. I had punched so viciously on the hardplate that the entire comb-lock mounting plate had warped. It had bent out and was blocking retraction of the main bolt bar! I have included photograph four to try and explain what I mean. (This isn't the safe, but the photo is clear enough to help illustrate what happened). Notice that the mounting plate goes clear over and stops right at the edge of the main vertical boltbar (this is the vertical bar that carries all three locking bolts). Now imagine a vicious punching attack on the hardplate. Remember, the hardplate is sandwiched between the door slab and the mounting plate. Imagine that some ignorant moron (me!) is pounding hard enough to actually bend the mounting plate toward the inside of the safe. Imagine that when you try to retract the boltwork, that the main vertical boltbar cannot pass by the warped mounting plate. Just imagine it. Now isn't that a nightmare?

It was. I ended up pulling the safe out from the wall it was next to, and side-drilling on all three locking bolts. It took me several hours of vicious punching to drive the bolts back. My arms felt like dead weights. And what a mess.

This is one skeleton I probably should have kept in my closet. But if I can prevent you from having a similar mishap, then it will have been worth it. But please, the next time you see me at a convention or meeting, don't ask me if I have warped any mounting plates lately! TNL



4. Imagine bending the mounting plate, blocking any easy attempt at entry - yikes!

by
Dave Mc Omie

GOVERNMENT

DRILL THE LOCK AND NOT THE SAFE IS EASY,

We are all aware of the maxim, "drill the lock, not the safe." The trick is knowing (a) how to determine which lock is on the inside of a locked safe, and (b) which way the lock is mounted. Sometimes it can be determined by the dial, sometimes by the handle, sometimes by a caster, sometimes by a hinge, sometimes by the serial number, sometimes by odd features of the safe, and sometimes you just have to guess.

But let's keep blind guesses to a minimum. After all, he who guesses most will botch most. No thanks. I prefer precision. Properly identify the safe, then deduce which lock is inside and which way it is mounted, and then use the best drill point for defeating the lock. That is the simple formula for becoming a master safecracker.

Uncle Sam has always kept us on our toes. Not so much identifying the locks—Group 1 locks are easy to ID—but in keeping track of the direction the lock is mounted.

I mentioned above that sometimes we have to use an odd feature of a safe to help identify it. This month we are going to look at two safes that are distinguished (in my experience, anyway) by an odd feature. The safes are shown in photographs one and two.

These are both government-issue lug doors. The first is primarily used by the Post Office, the second by other departments of Sam's bloated bureaucracy. These safes sometimes find their way into private use after being auctioned off, and you never know when you will be facing one.

So how do you identify the lock? That is easy. The dial of the safe in photo one goes click-click as it approaches and passes zero. That means the lock is a Mosler MR-302. The dial of the safe in photograph two pushes in at zero and pops back out. That indicates an S&G 8500 series lock.

But which way are they mounted? There is no way to determine that from the dial or the lock. I have seen both of these doors equipped with different locks. You will find the MR-302, the 8500 series, and the 8400 series locks in these doors.

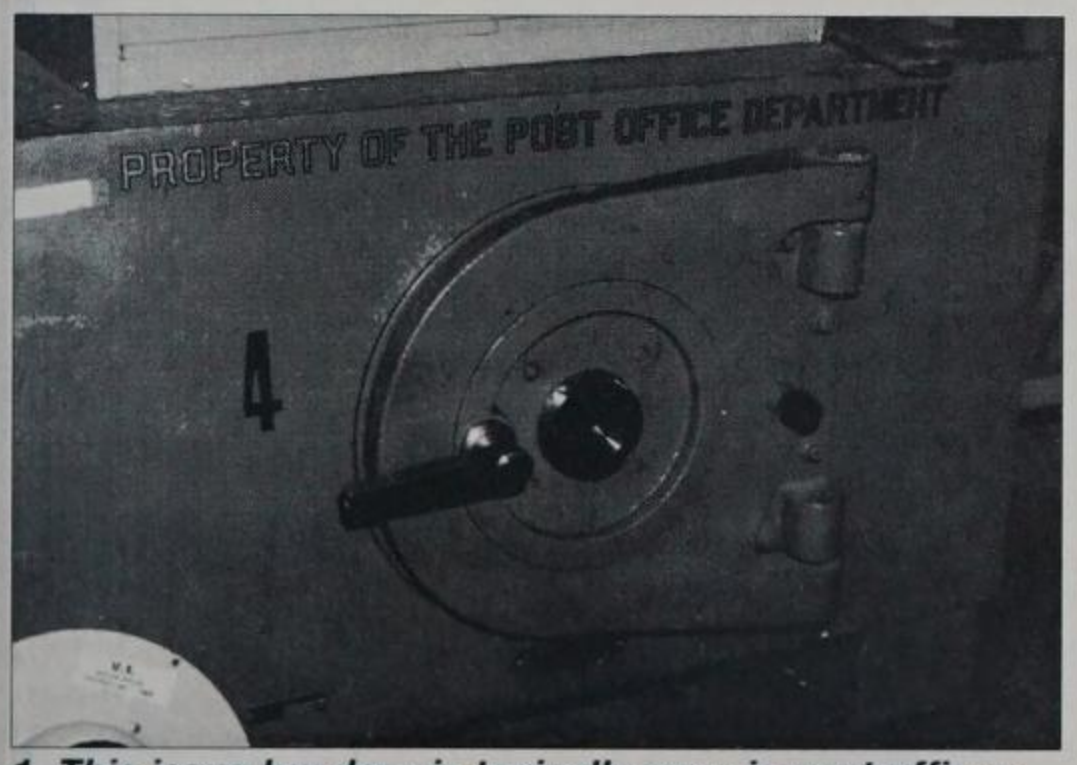
The mounting of the lock is determined not by the dial, not by the handle, and not by the hinge. The odd feature that is brought to bear to solve our problem is the size of the safe body! Notice that the safe in photograph one has a very wide body. In my experience, these wide-body, government-issue lug doors use the standard Mosler dual-bolt arrangement, with a VD-mounted lock. In this case, it happens to be an MR-302. *(See photograph 3.)*

Now look back at photograph two. Notice that this safe has a square body that barely extends out past the sides of the door. In my experience, these small-body, government-issue lug doors use a LH-mounted lock with an unusual (government only) boltwork. This arrangement can be seen in photograph four. In this safe, the lock happens to be an 8500.

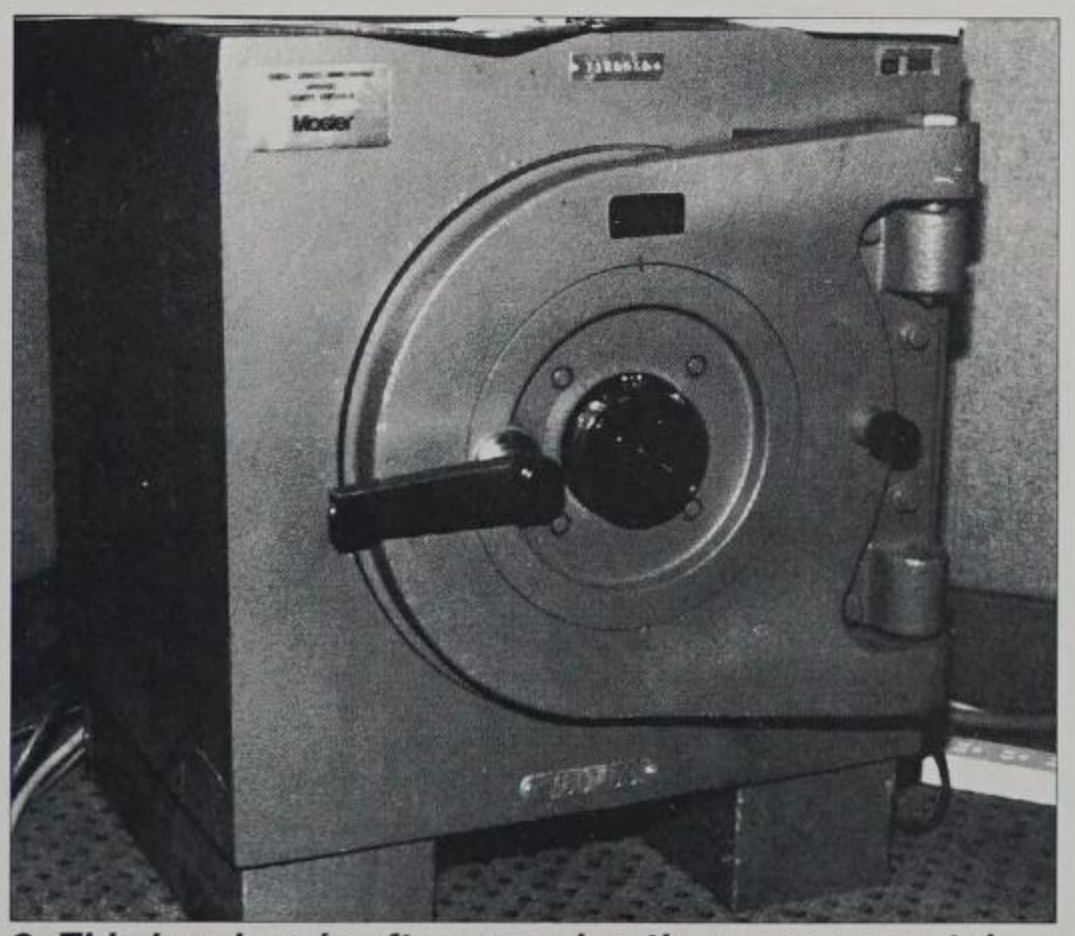
We now have a two-step procedure to follow in determining the lock and handing in Mosler's new-style government-issue lug doors.

Step One: identify the lock via the dial. If the dial goes click-click, it is an MR-302; if the dial has a butterfly in the middle of the dial knob, it is an 8400; if the dial pushes in at zero and pops back out, it is an 8500.

Step Two: identify the lock handing via the safe body. If the body is wide, the lock is mounted vertical down. If the body is square, the lock is mounted left hand.



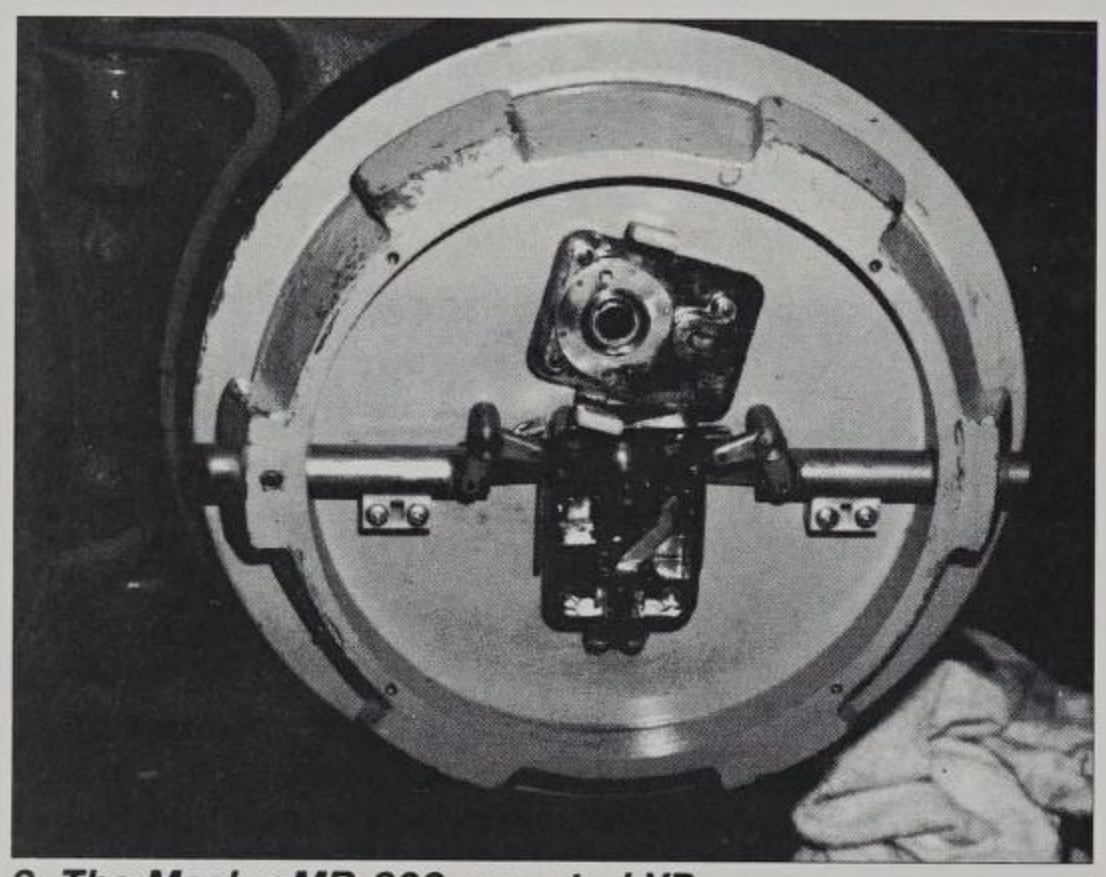
1. This issue lug door is typically seen in post offices.



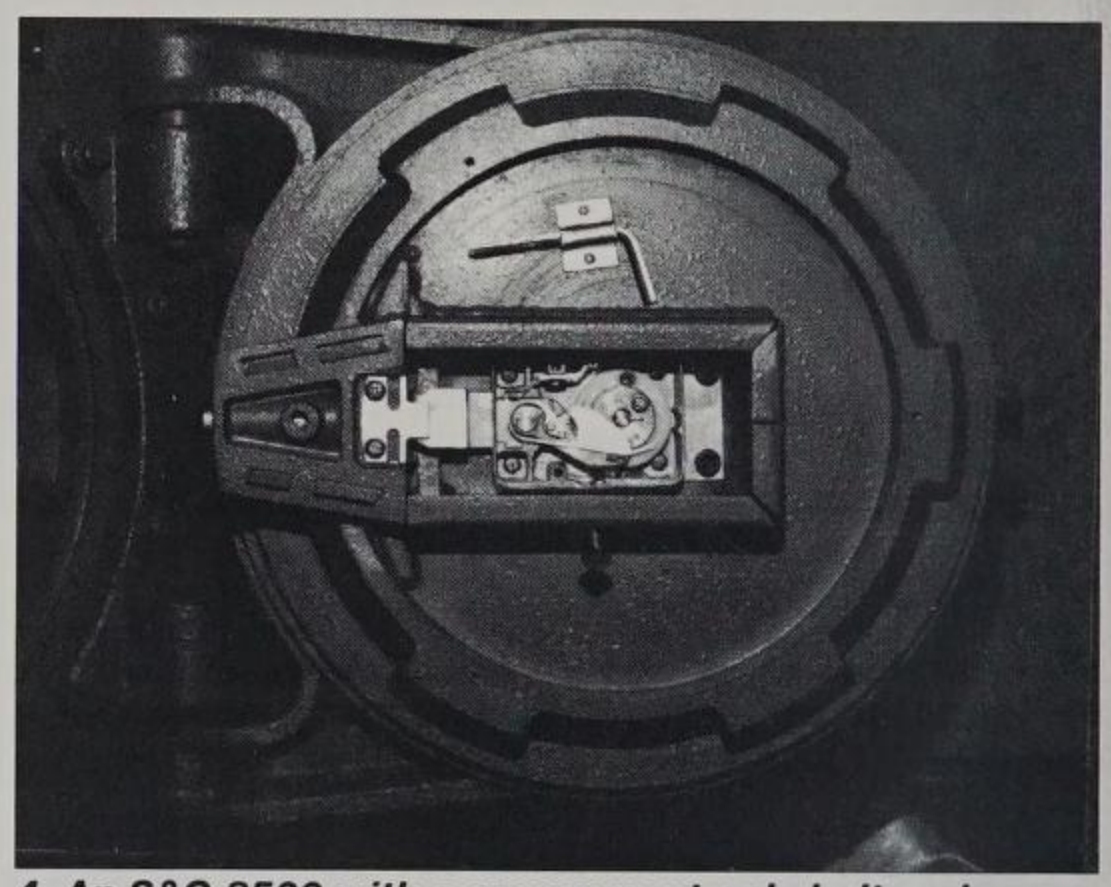
2. This lug door is often seen in other governmental departments.

ISSUE LUG DOORS

UNLESS YOU CAN'T IDENTIFY THE LOCK OR ITS DIRECTION.



3. The Mosler MR-302 mounted VD.



4. An S&G 8500 with a government only boltwork.

Next month, we will look at some of the older Mosler government-issue lug doors. We will see locking bolts going off in weird directions, and we will open one by drilling for the hookbolt. See ya then! TNL

U.S.P.O. Lug Doors

by
Dave McOmie

So, do ya got a Mosler U.P.S.O. lug door or a Mosler commercial lug door? What's the difference?

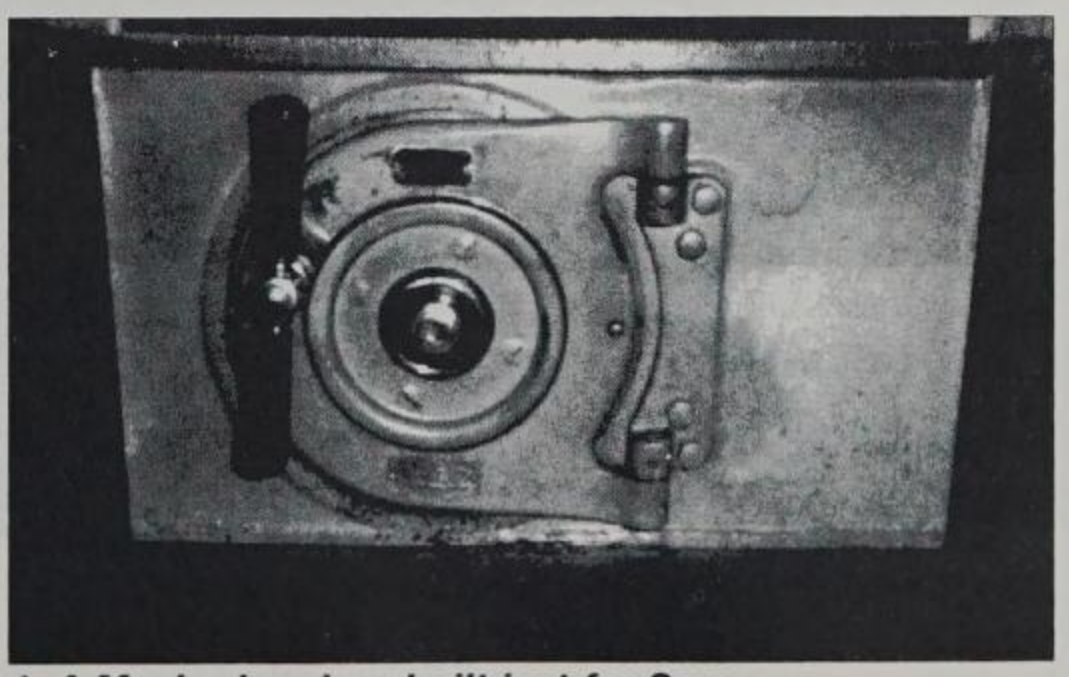
Safe manufacturers have long built custom containers for Uncle Sam. Sam doesn't want any old garden variety safe. No sir. Sam wants safes that are a cut above. And he gets 'em.

Take a look at the Mosler lug door in photograph one. Does anything look out of the ordinary? Notice the location of the bearing plate screws. Viewed straight on, they form a diamond, not a square. That is the at-a-glance method of telling an old-style Mosler Post Office lug door from an old-style Mosler commercial lug door.

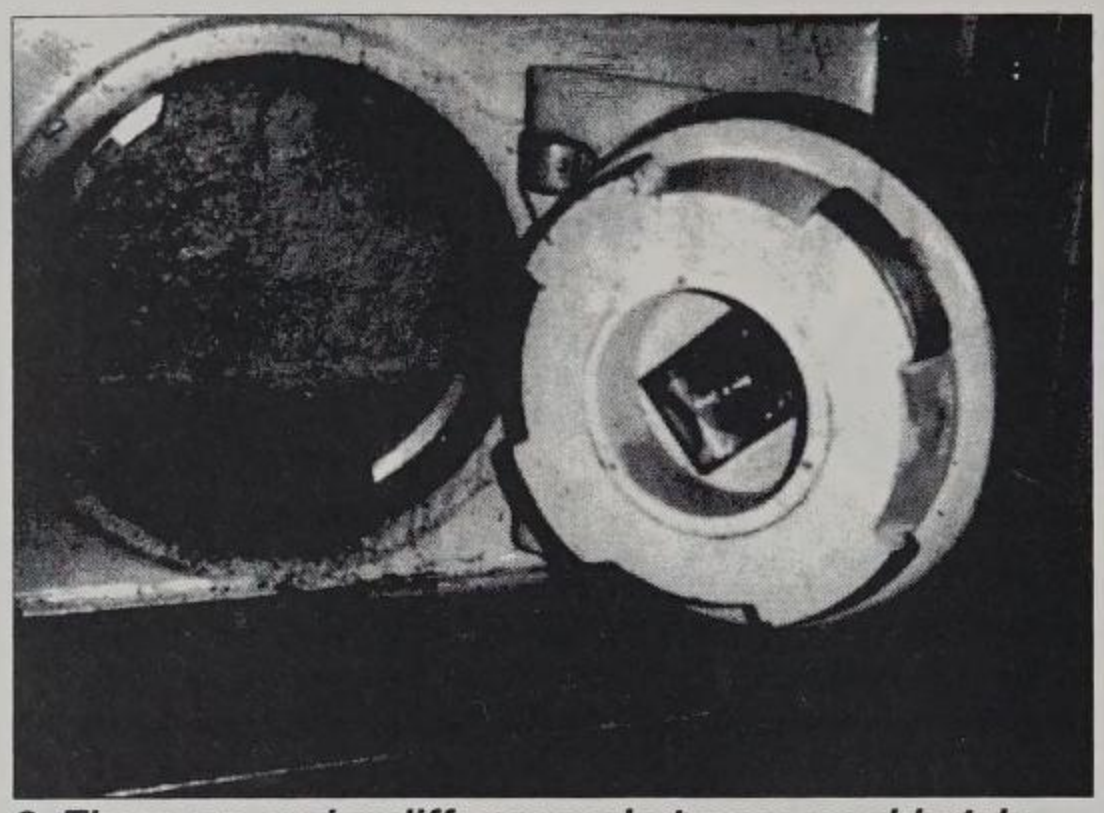
What difference does it make whether the lug door is Post Office or commercial? It makes a huge difference, as you can see in photograph two. Notice the location of the lug with the cut-out for the locking bolt to engage into. It is not at the traditional 9 o'clock position, nor is it at the once-in-a-while 3 o'clock position. It is at 10:30!

That's right. Uncle Sam had a good number of his Post Office lug doors built with the locking bolt pointing at 10:30.

Photograph three shows a slightly different Mosler Post Office lug door. Once again, notice the location of the four bearing plate screws. Diamond, not square.



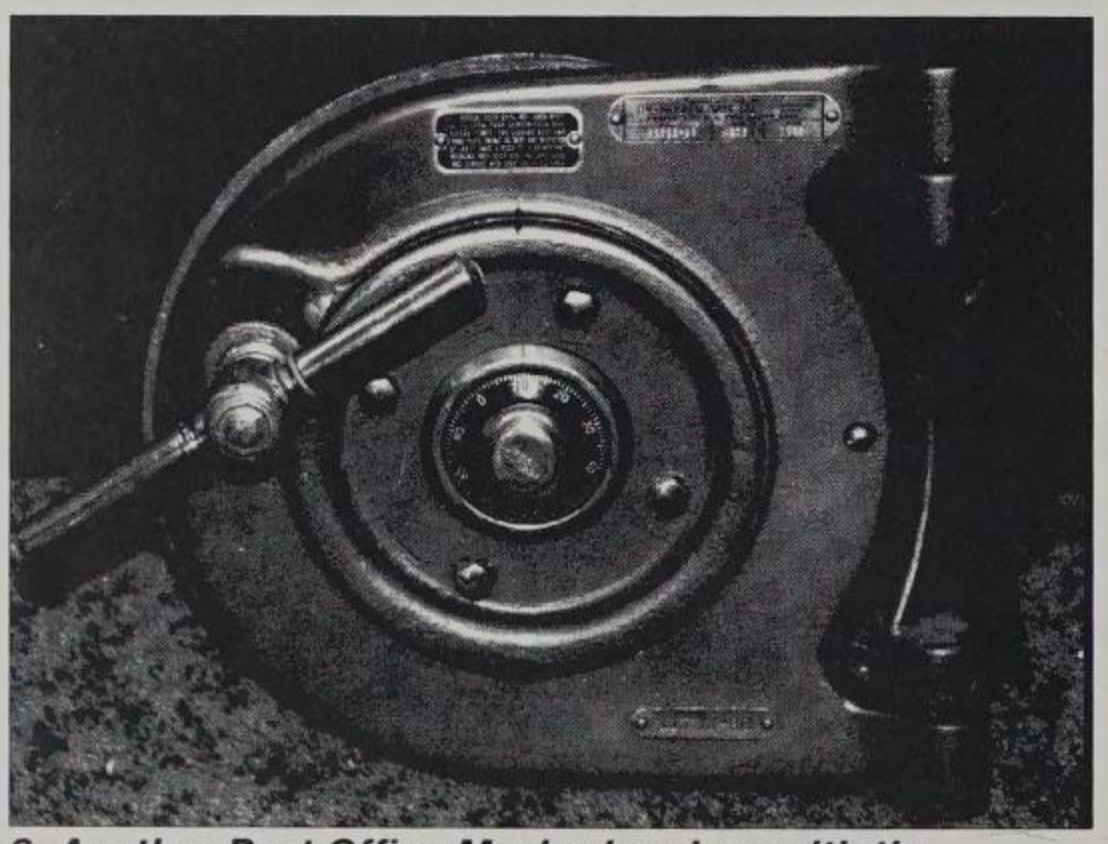
1. A Mosler lug door built just for Sam.



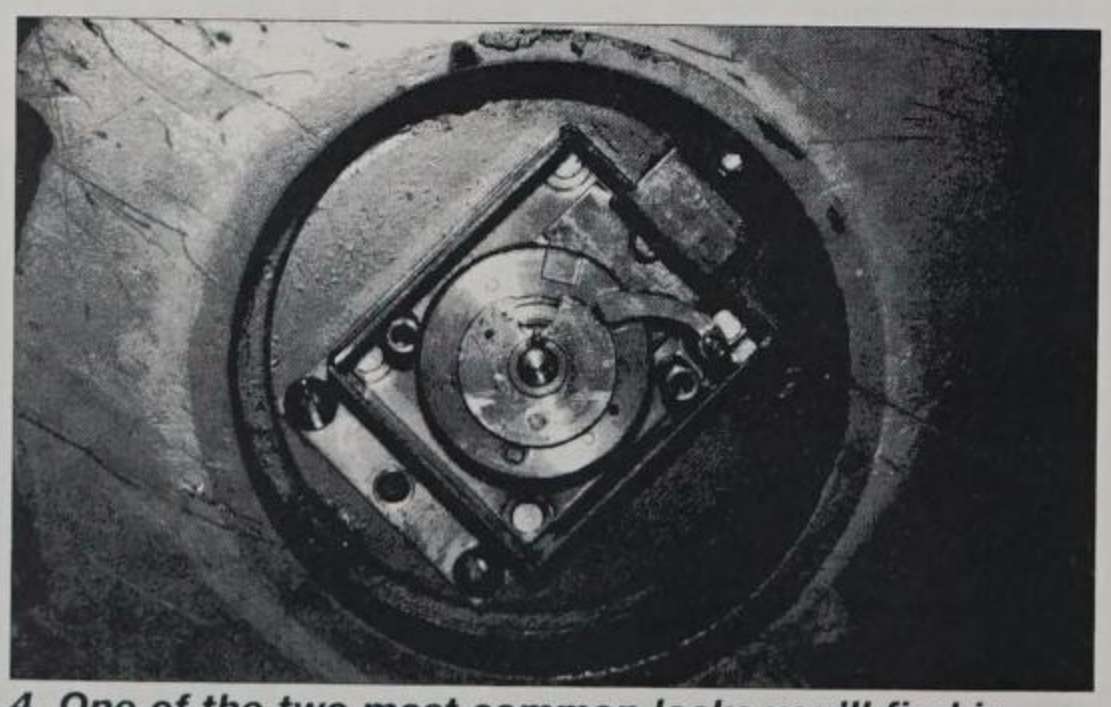
2. There are major differences between an old-style Post Office lug and an old-style Mosler commercial lug door.

Photograph four shows the inside of the door. We see the lock with the back cover removed. This is a Mosler KCB-107, one of the two most common locks you will find in these doors.

Photograph five shows a burglarized Mosler Post Office lug door that I faced awhile back. The fact that the body of this safe ran the width of the fire safe it was in gave me my first clue. Then I got the big clue when I noticed the position of the four bearing place screws. They were not at their traditional positions like they are in commercial lug doors. They formed a diamond, not a square. Bingo—I knew it was a USPO lug door, most likely with the locking bolt pointing up at 10:30.



3. Another Post Office Mosler lug door with the diamond configuration on the bearing plate screws.



4. One of the two most common locks you'll find in these doors, this one is equipped with the Mosler KCB-107.

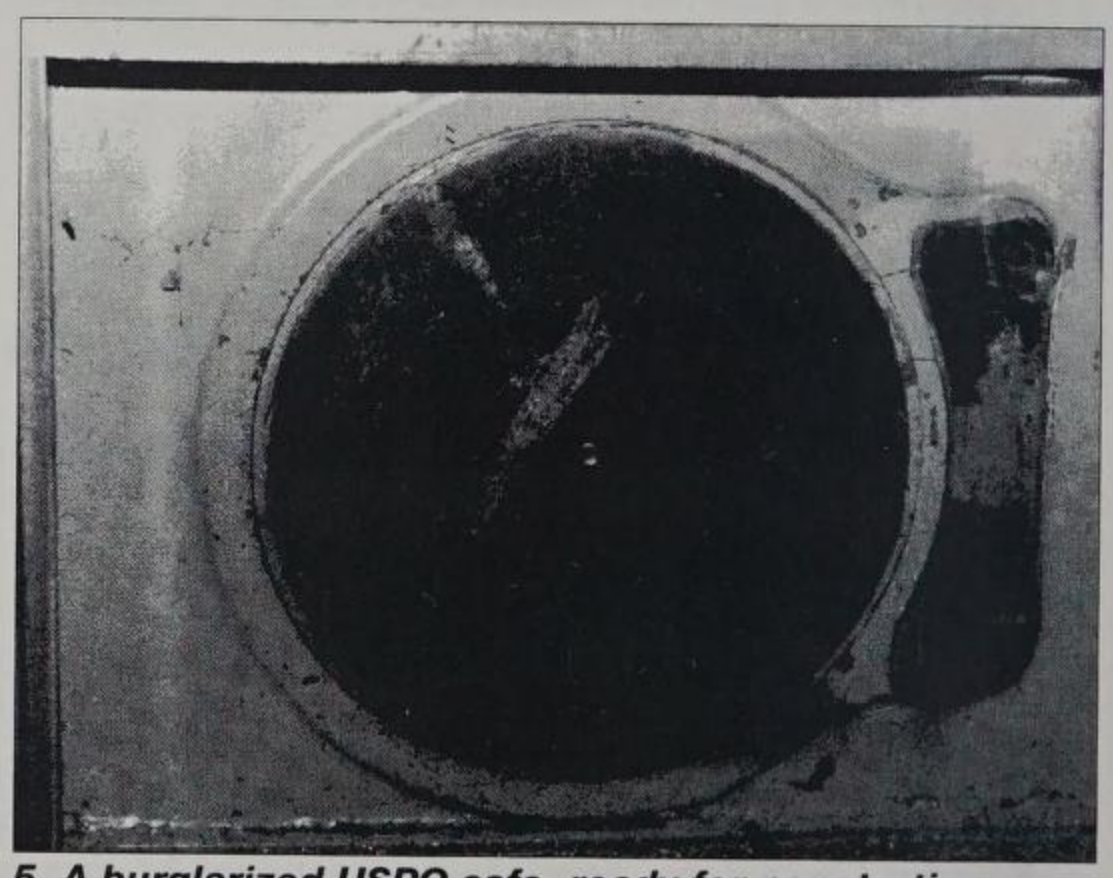
I wanted to drill for the hookbolt. I was unsuccessful using this technique for many years. It wasn't until approximately 1988 that I finally got the technique to work for me, and I have loved it ever since. The trick is to accurately identify the safe and the safe lock.

I knew it likely had a lock in the B101-107 family pointing up at 10:30, so that is where I drilled, as you can see in photograph six. A 3/8" Strong Arm bit is penetrating the hardplate that lies between us and the hookbolt.

Once the hole was complete, I peeked in. I was a little uptight, because drilling at 10:30 feels awkward as heck. But the hole was perfectly placed, right in the middle of the round locking bolt.

Next, I drilled a hole through the locking bolt and through the relocker that is inside it. I inserted a short length of wire through the hole. The goal here is to trap the relocker from firing when we perform the next step.

The next step is a little nerve wracking the first couple of times you do it on safes. Push or punch the hookbolt of the combination lock out of the round locking bolt. If the relocker was not adequately pinned, it will fire. It does not. Whew!

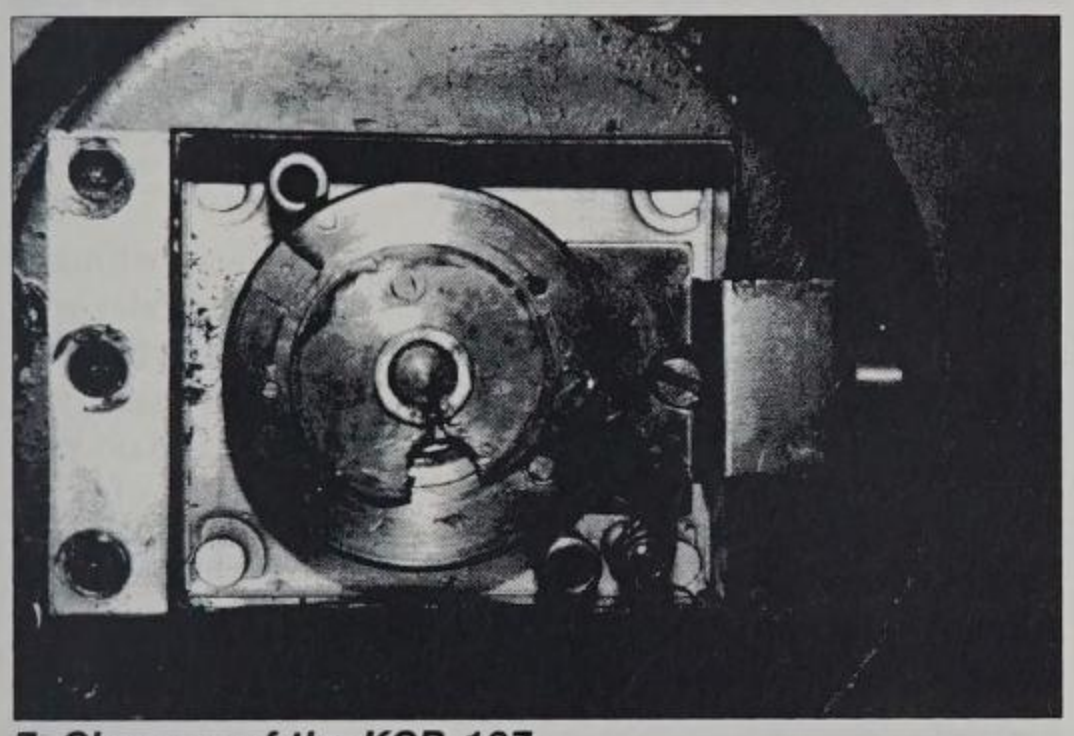


5. A burglarized USPO safe, ready for penetration.

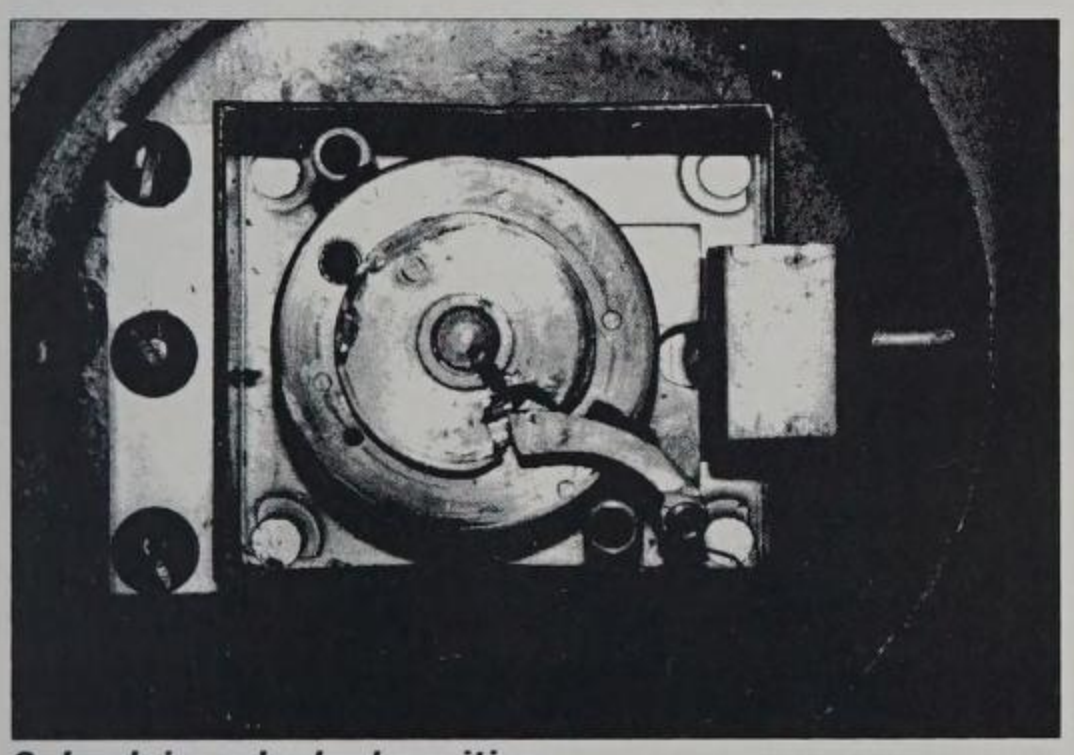
6. Drilling for the hookbolt.

Now for the easy part: slide the round locking bolt to the unlocked position, and rotate the door open. Piece of pie; easy as cake . . . or is it piece of cake, easy as pie?

Photograph seven is a close-up of the KCB-107. Unlike most Mosler locks, the KCB-107 is a rear-drive lock—the wheels are on a post inside the lock and the driver is mounted at the rear of the lock. This is a posed photo, where I bent the hookbolt back into shape before snapping the shot. I wish now that I had snapped a photo of the way the inside of the door looked when I first removed the back cover.



7. Close up of the KCB-107.

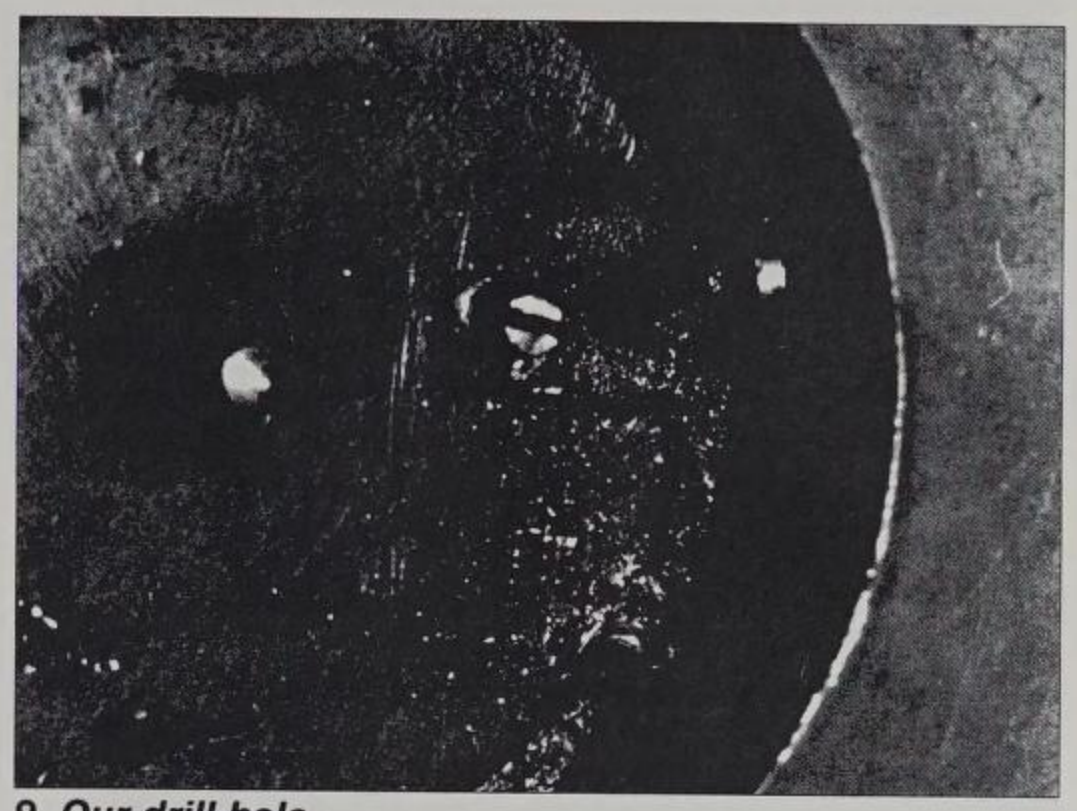


8. Lock in unlocked position.

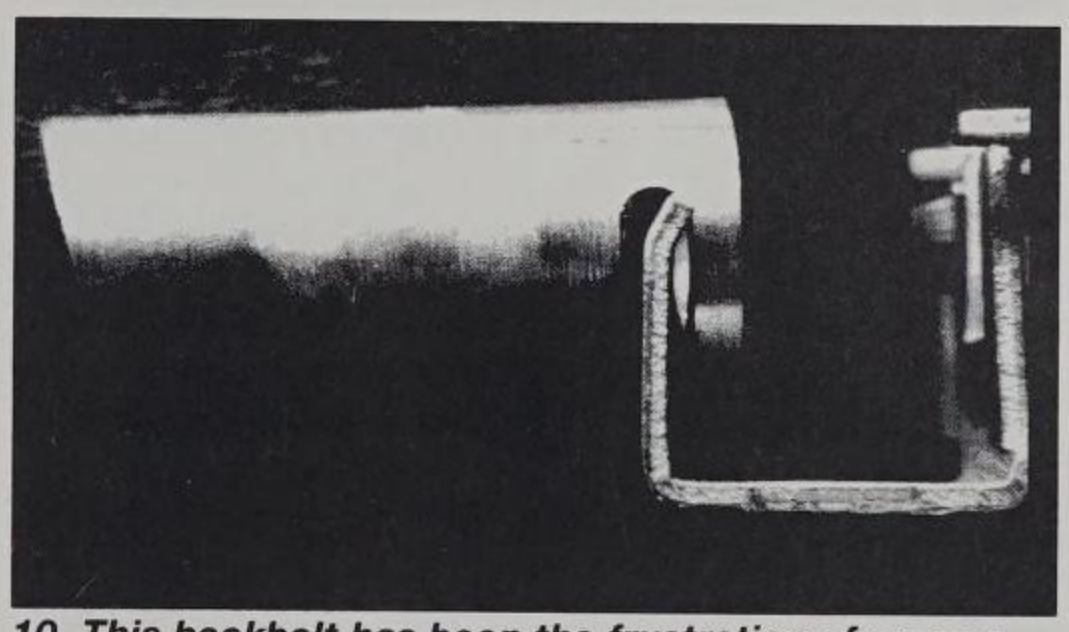
Photograph eight shows the lock in the unlocked position. This is how everything looks in the retracted position when the lock is dialed open.

In photograph nine I have removed the lock from the door to give us a look at the hole that opened the safe. See that screw just to the left of the hole? That screw performs a valuable function. If you were to punch the lock off the door and the relocker were to fire, the screw prevents the relocker from falling inside the safe!

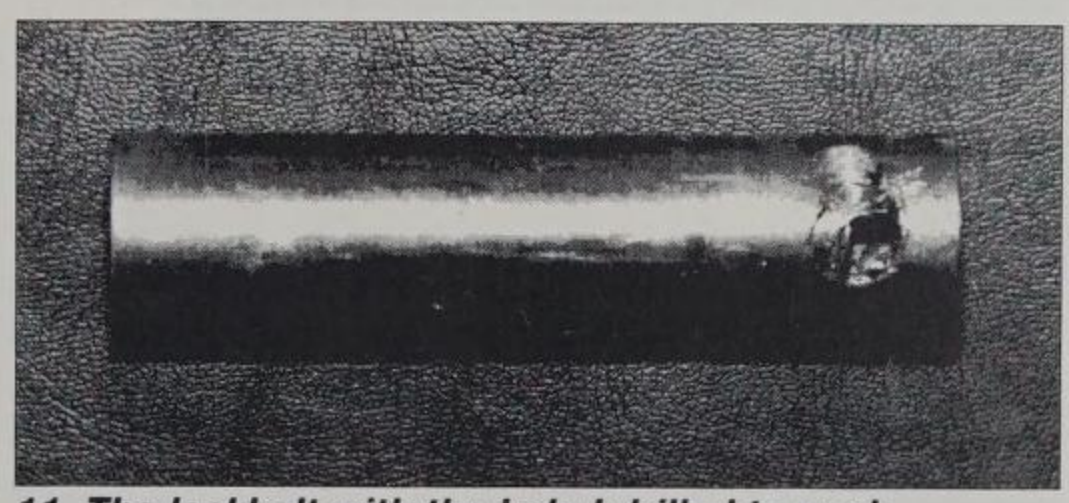
Photograph 10 gives us a top-view of a hookbolt engaged into a round locking bolt. That simple little connection has been the source of much frustration on many a safe jobs around the country.



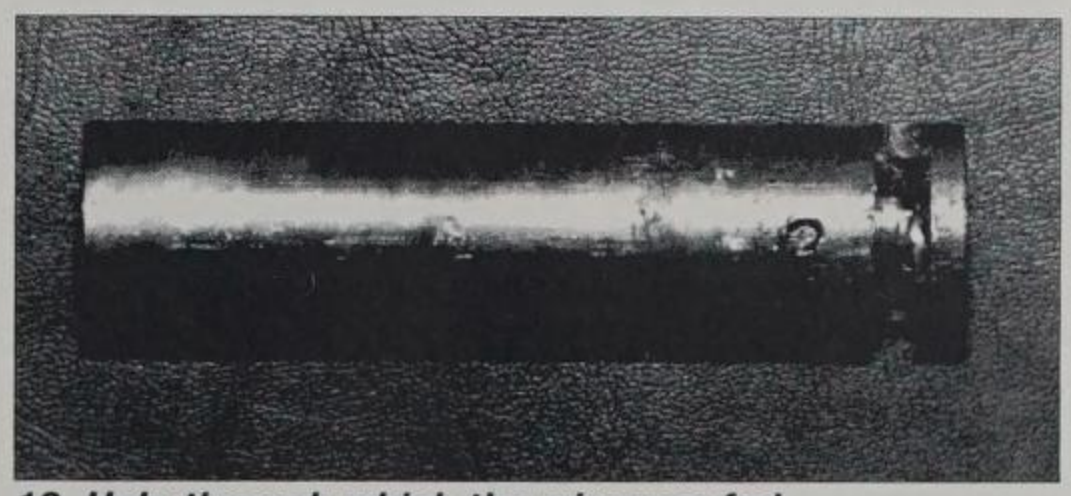
9. Our drill hole.



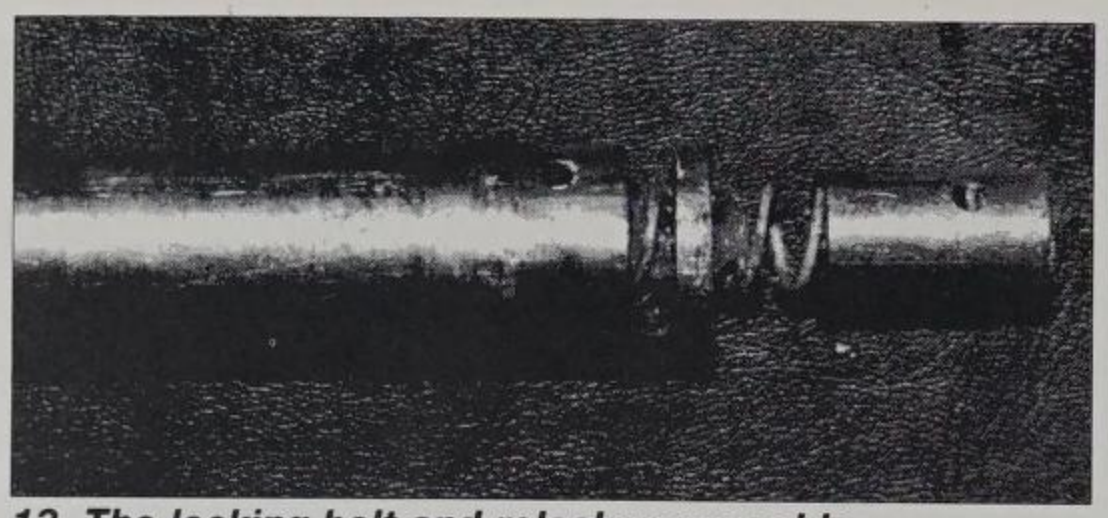
10. This hookbolt has been the frustration of many a locksmith.



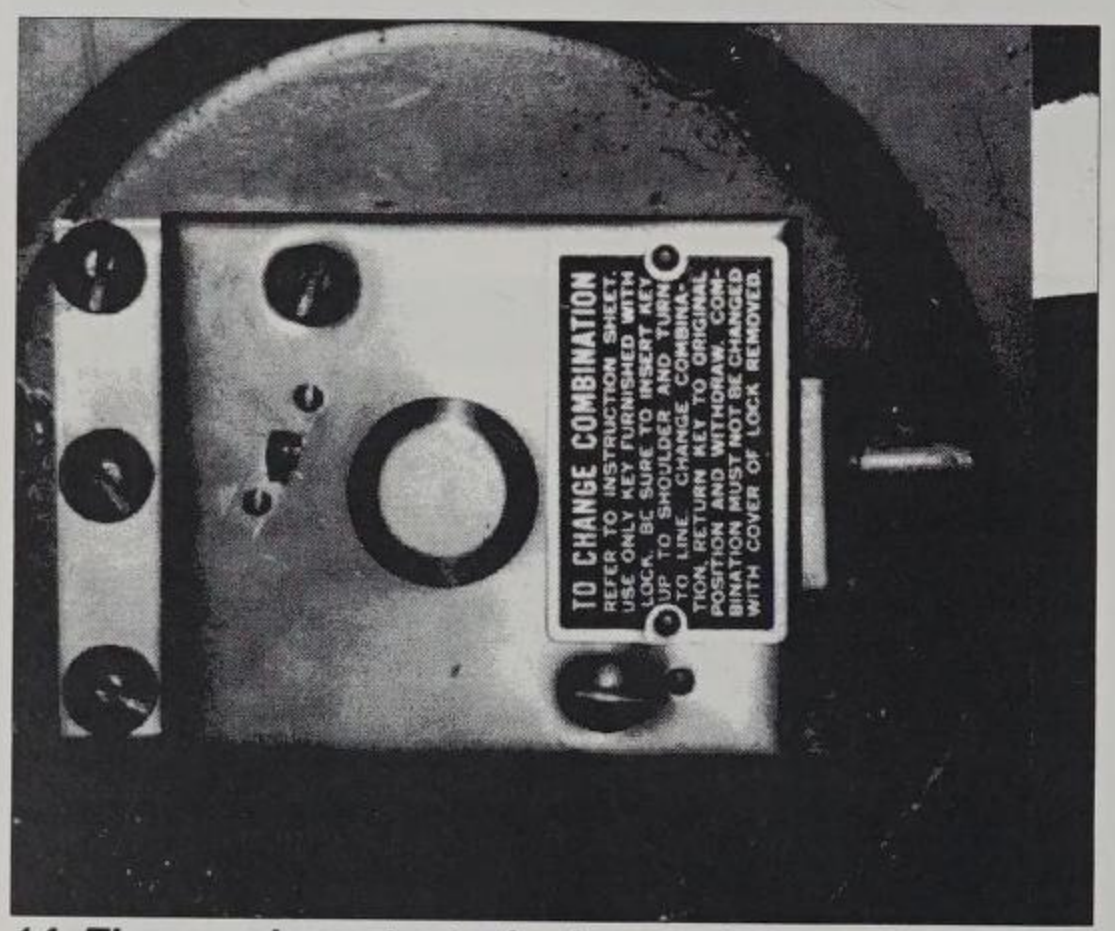
11. The lockbolt with the hole I drilled to work through.



12. Hole through which the wire was fed.



13. The locking bolt and relocker assembly.



14. The ever important wire inserted through the bolt to prevent relocking.

TNL

Photograph 11 shows the big hole I drilled in the side of the locking bolt that was facing me. I drilled a big hole because I had to perform two operations through that hole. First, through the leftmost side of the big hole, I drilled a smaller hole through the relocker and through the back side of the locking bolt in which to insert a wire to prevent the relocker from firing. Second, through the rightmost side of the hole I inserted a small screwdriver and pushed/punched the hookbolt out of the locking bolt.

Photograph 12 shows the tiny hole that was drilled through the back side of the locking bolt. Through this hole, which was drilled at a bit of an angle, the wire was inserted.

Photograph 13 shows the locking bolt, the relocker and the relocker spring. Notice the little hole in the locking bolt, and the matching hole in the relocker.

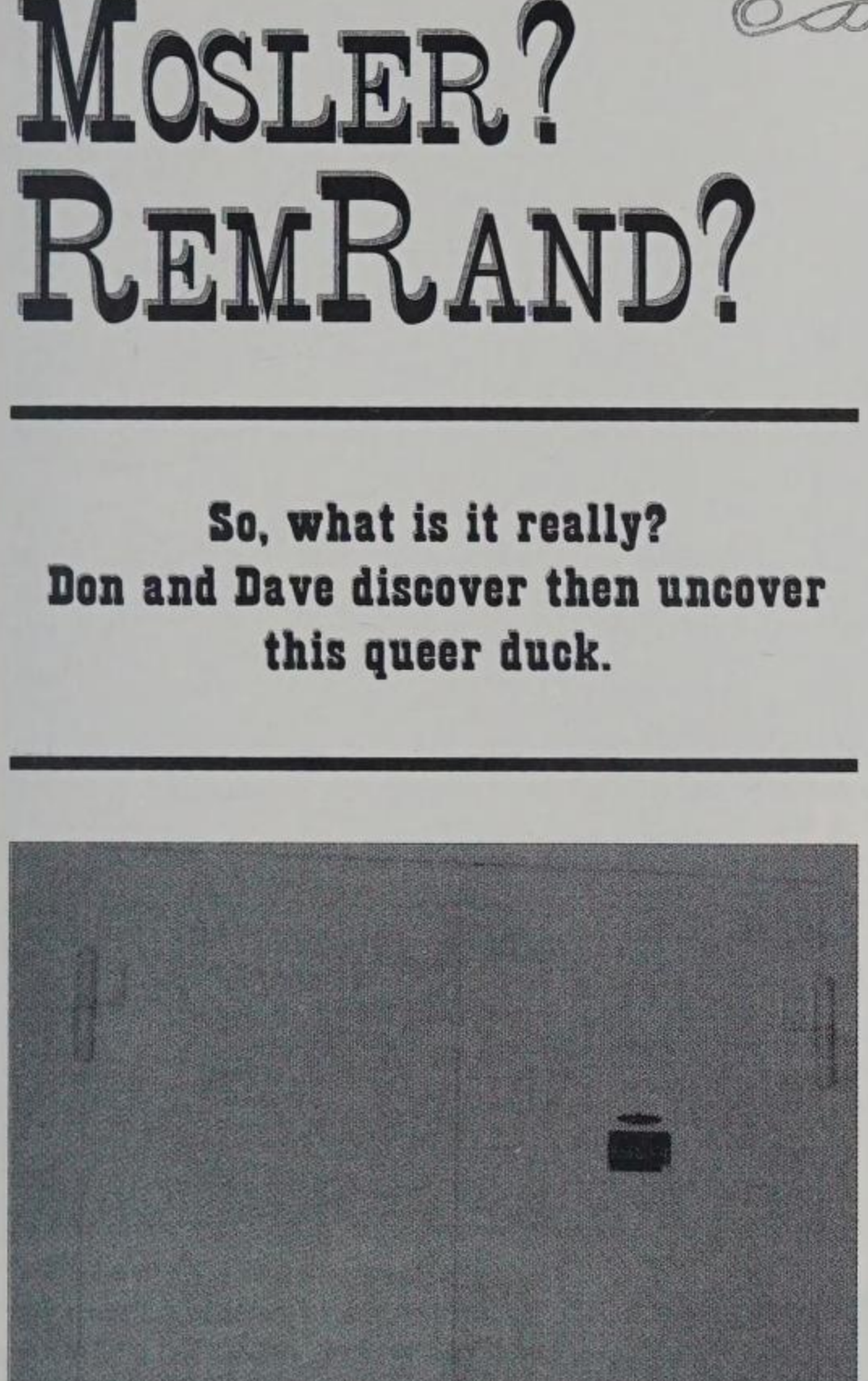
Photograph 14 shows the lock back in place, with the little wire sticking through the hole. You might wonder why I have spent so much time talking about the wire that prevents the relocker from firing. The reason is that if you don't adequately take care of the relocker, it will fire on you. Take my word for it. I know. I was showing off this technique at a seminar and got in a little bit of a hurry, and guess what? You guessed it. Egg all over the face of the know-it-all instructor!

McOmie's Maxim: an occasional fumble keeps us humble.

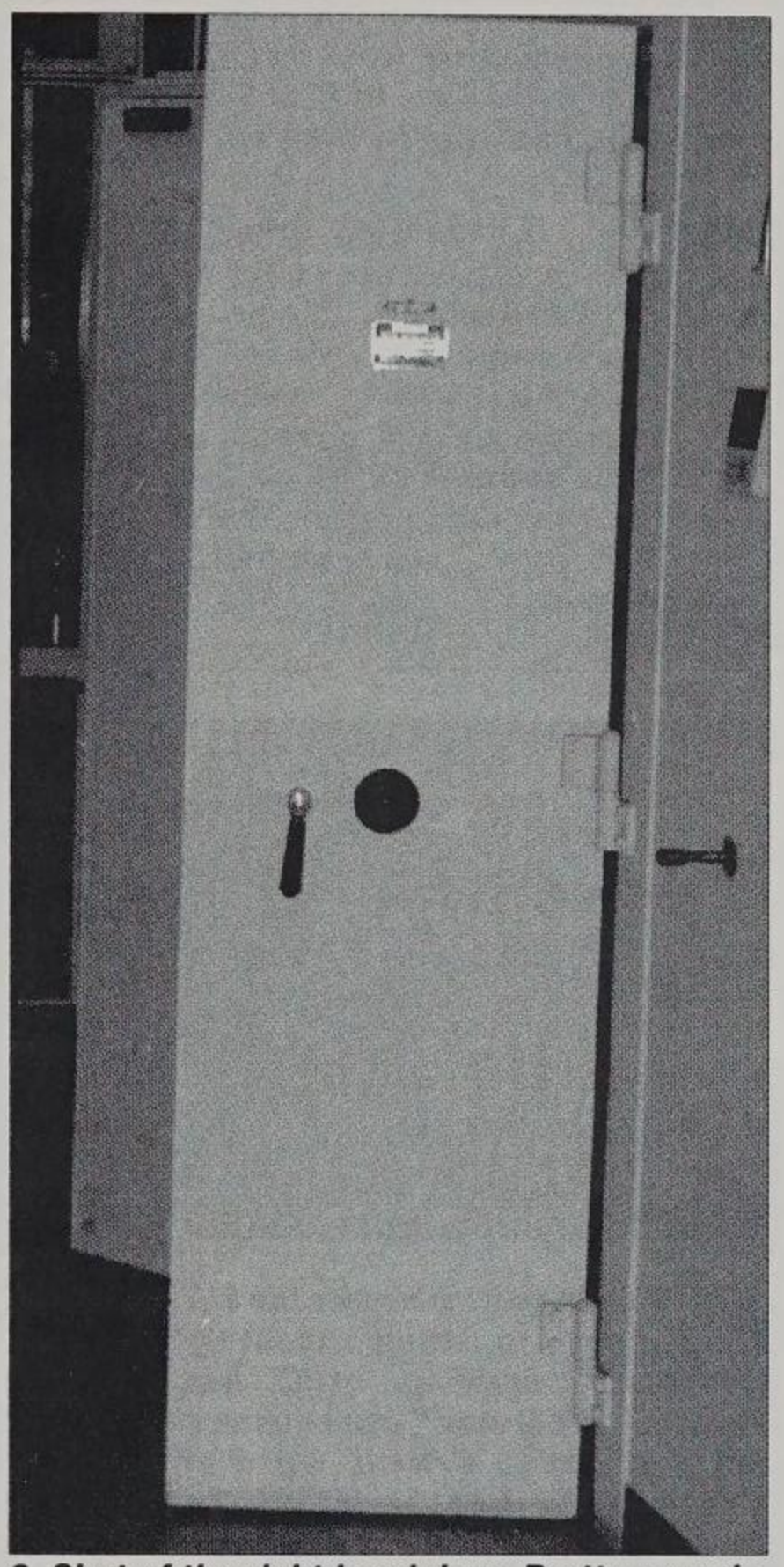
See y'all next month.

DIEBOLD? MOSLER? REMRAND?

So, what is it really?
Don and Dave discover then uncover this queer duck.

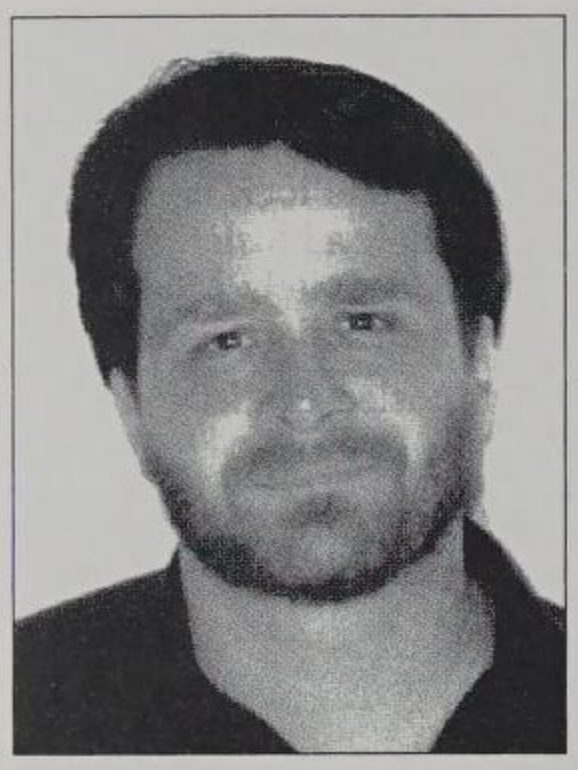


1. What is it?! This strange hybrid came to Don Spenard.



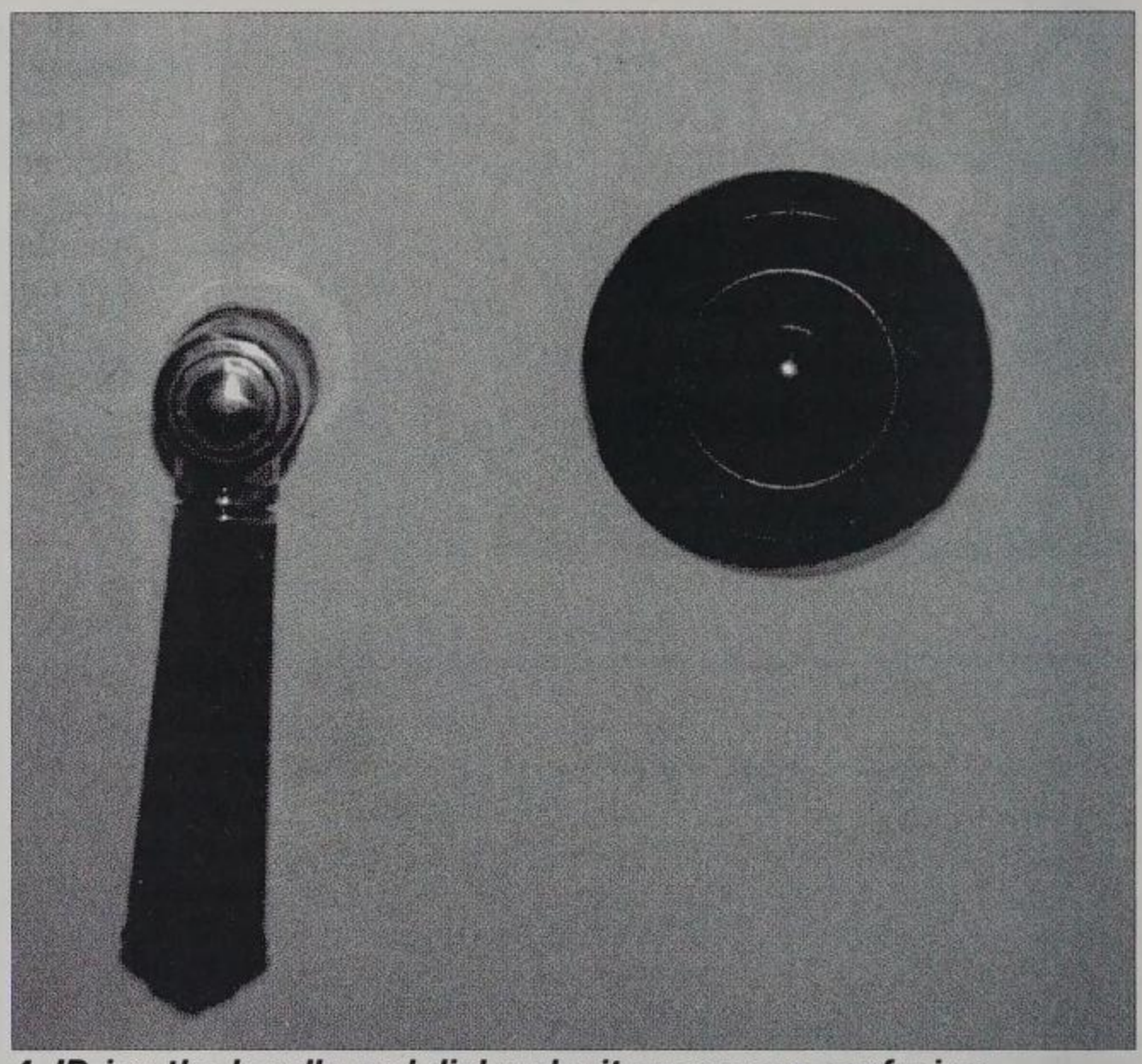
2. Shot of the right hand door. Pretty generic.

3. Labels of confusion.



by
Dave
McOmie

Sometimes it is a real pain to make accurate identification. The vault door in photograph one is one of the oddest ducks I have ever seen. This old double-door, fire-resistive vault door was photographed by my good buddy, Don Spenard, at a Seattle business. What a hybrid.



4. ID-ing the handle and dial make it even more confusing.

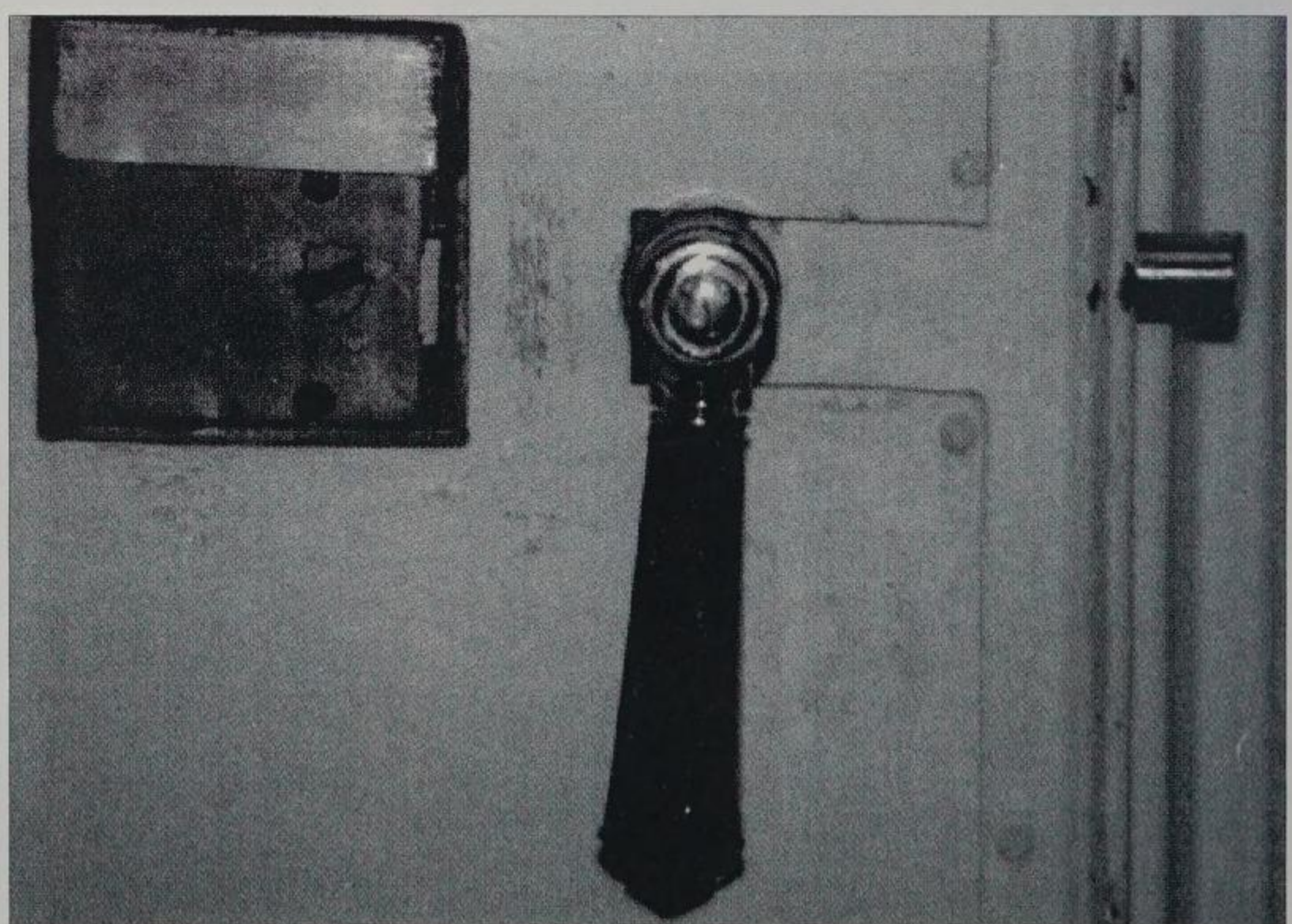
5. Profile of the handle and dial.

In photograph two we have a good look at the right hand door. So far it looks pretty generic. But let's zoom in for a look at some details.

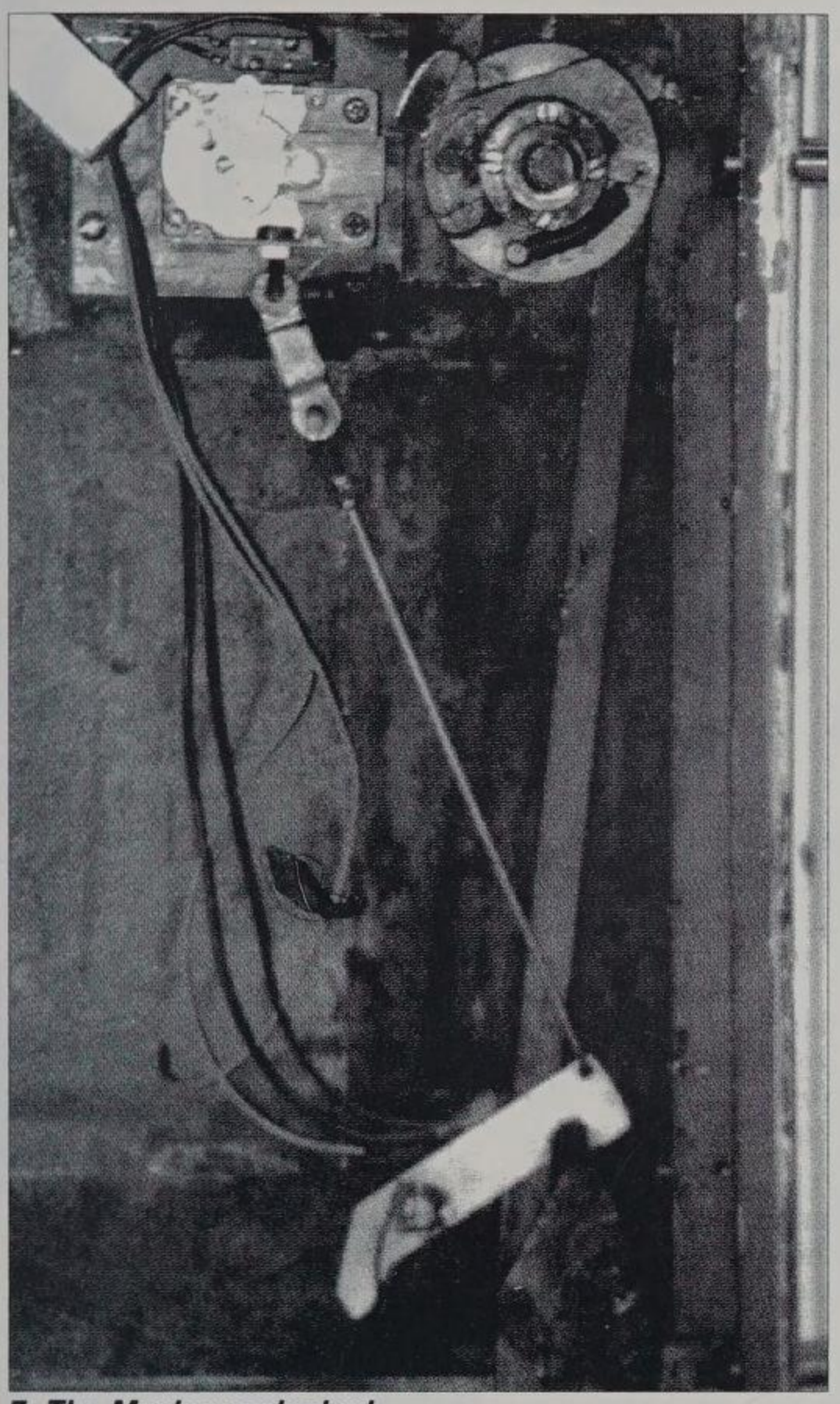
The confusion begins when we look at the labels that are at eye level on the outside of the door. *(See photograph 3.)* The Remington Rand label would make one think it is probably a RemRand. The Timelock label gives one pause, because it says Diebold. Huh? Let's look further.

Photograph four is even more confusing. The handle is unquestionably Mosler, but the dial is just as unquestionably Diebold. What is going on here? So far, we have clues that lead to three different manufacturers!

Photograph five gives us a profile of the Diebold dial and Mosler handle.



6. Even from this inside perspective we can't be sure.



7. The Mosler uncloaked.

All right, enough is enough. Let's look inside and see if we can identify this hybrid.

Photograph six shows the back of the door around the lock and emergency escape handle. The lock is marked "Diebold 900." But the handle is definitely a Mosler. And the way the emergency escape works is definitely Mosler. (If you are locked inside, simply rotate the handle to escape.)

Thus far, we are leaning toward Mosler. But let's remove the back panel and have a closer look.

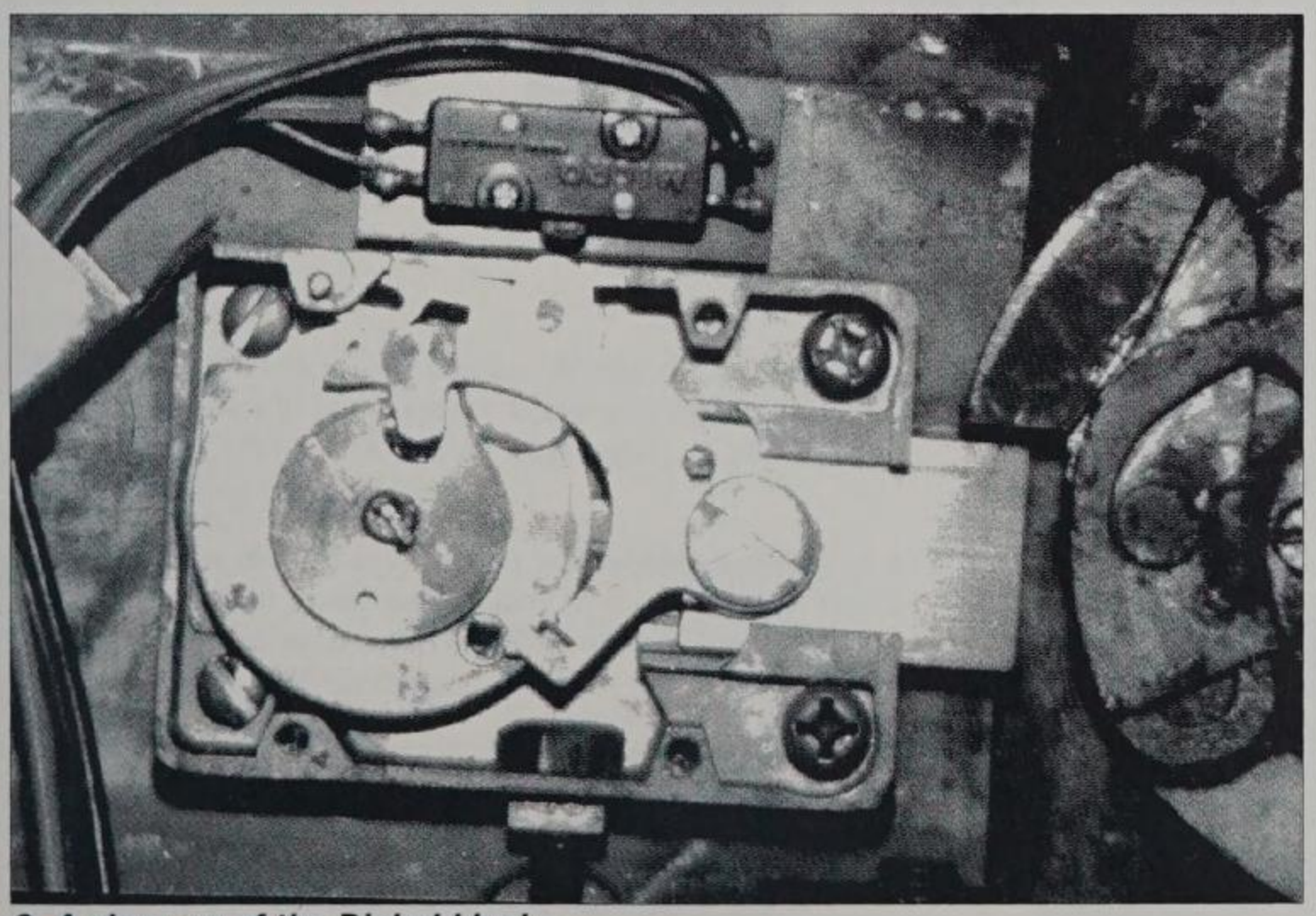
8. A shot of the relocker found in most all Mosler fire-resistive vault doors.

Photograph seven is of the inside of the vault door, exposing the lock, escape mechanism, and relocker. Now there is no doubt: this vault door, which has Remington Rand's name on, and Diebold's name, dial and lock on it, is actually a Mosler!

Photograph eight is a close-up of the famous relocker found in almost all Mosler fire-resistive vault doors. It is a simple device. When fired, it springs down and hooks a peg on the triangular-shaped pivoting bolt cam, preventing the boltwork from retracting.

Photograph nine is a close-up of the Diebold lock. Hmmm. I wonder what this vault door looked like when it left the factory floor?

We'll never know. See ye next month. TNL

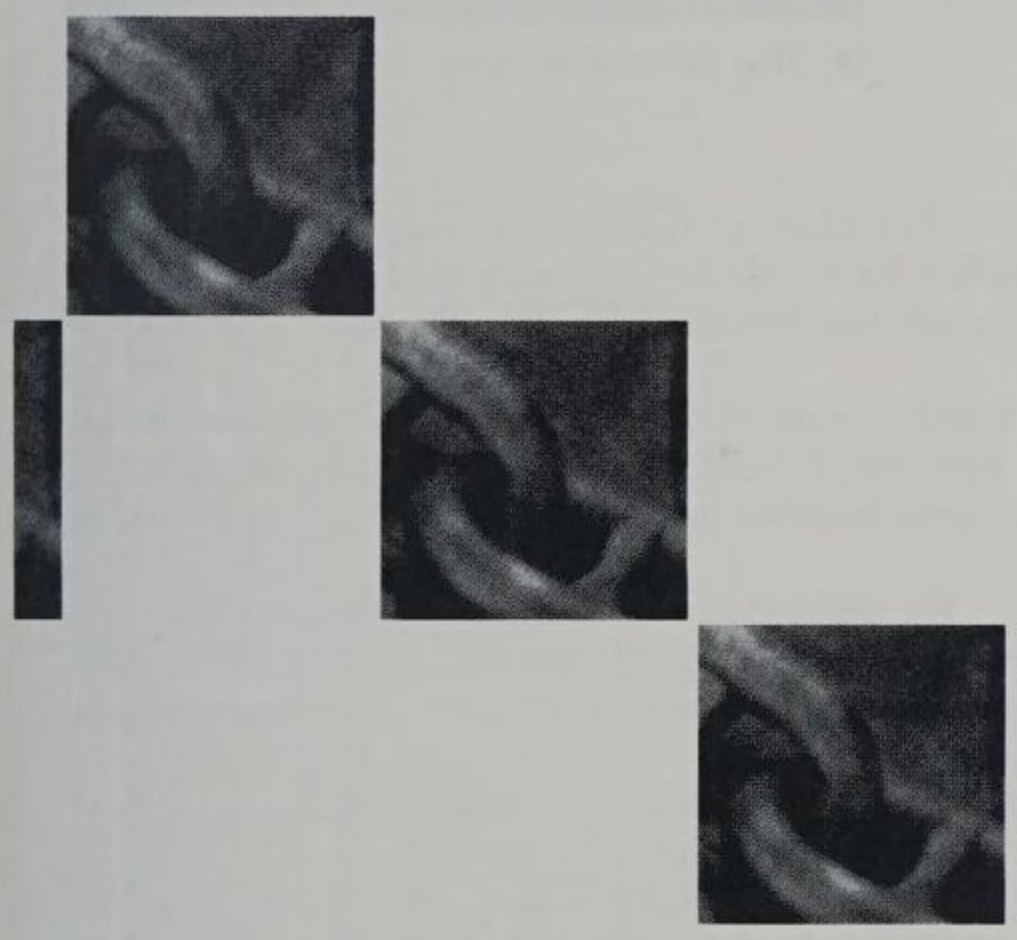


9. A close up of the Diebold lock.

I have been saying it for as long as I have been in this business — identify, identify, identify!

Opening a Relocked Gary

Before enjoying his new prize, Jack Haven Had to open it first. Even the best prizes can turn out the "boobie prize"

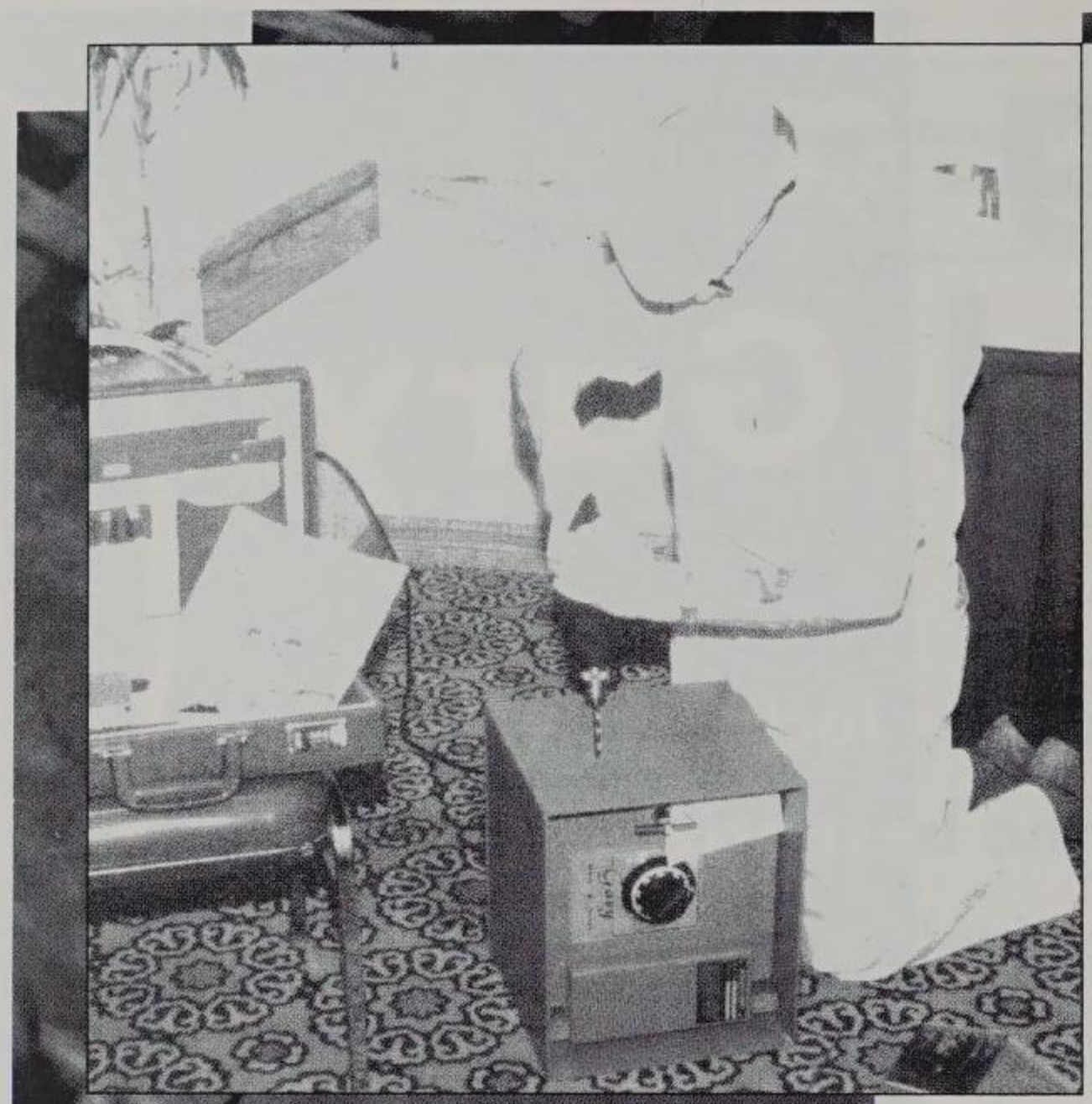


By: Dave McOmie

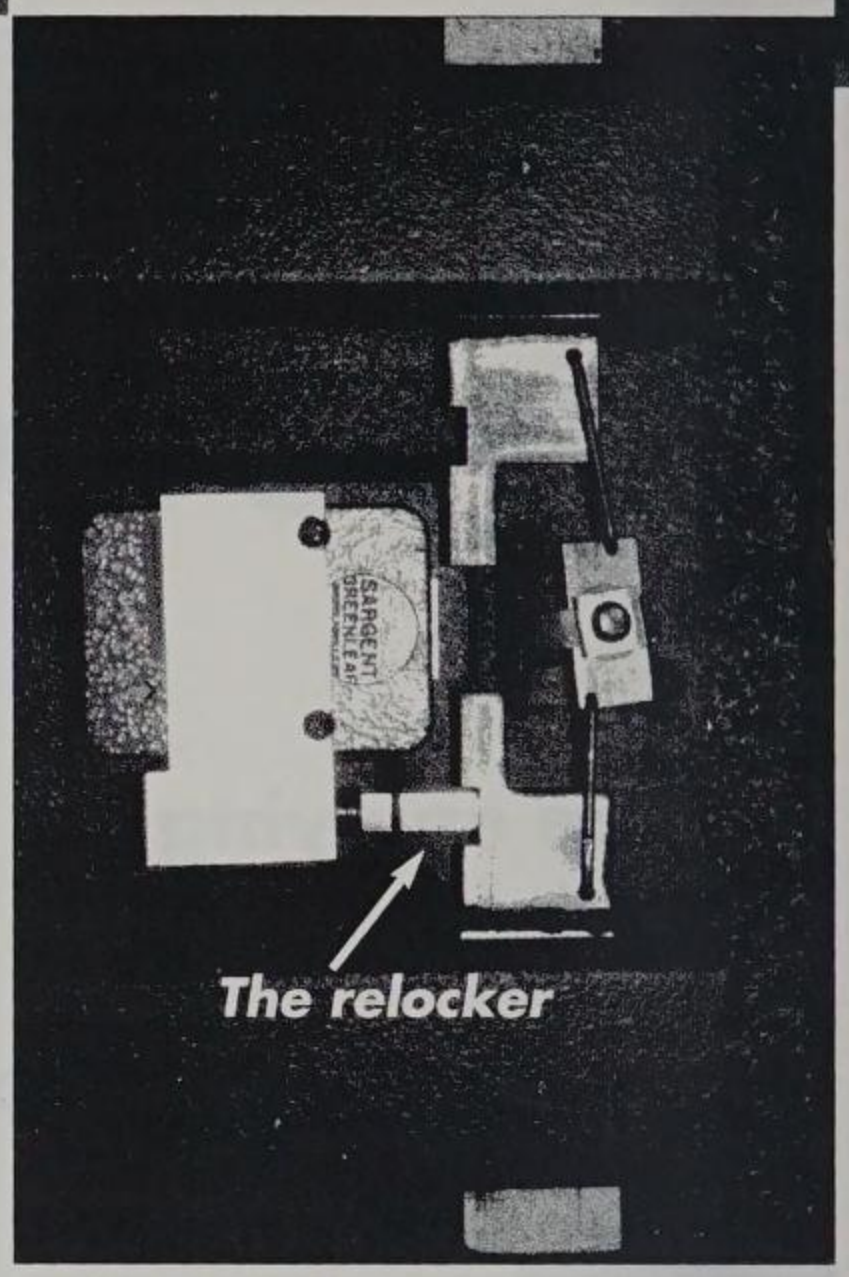
Everybody loves to win a prize. At one time or another, most of us will buy a lottery ticket or a raffle ticket. We dream of Ed McMahon calling our name, or of Reader's Digest knocking on our door.

But dreams ain't reality. I never win anything, not even a boobie prize. But some people do. At a convention that I attended, various prizes were raffled off. I, of course, won zip. Zilch. Nada. The big donut.

Jack Haven, Montana's friendliest hat-modeling locksmith, won a B-rate Gary square door floor safe. After bowing to the crowd, Jack leaned down and dialed the combination. It worked perfectly. But when he tried to rotate the handle to open the safe, it wouldn't budge.



1. Jack finishes drilling the B-rate Gary square door floor safe he just won.



2. The fired relocker.

Uh-oh. For whatever reason, the relocker had fired. Jack and I talked it over. He had just purchased a set of my books, and this safe was beautifully depicted on page 71 of volume two.

Jack didn't want to do any damage to the door of this brand new safe. I couldn't blame him. Luckily, the safe had not yet been installed in concrete, so we had access to the sides.

We decided to side-drill through the opening side of the body, aiming for the relocker. With a little luck, we would be able to push it back and rotate the handle.

In photograph one, Jack is finishing the 5/16" hole through the opening side of the safe.

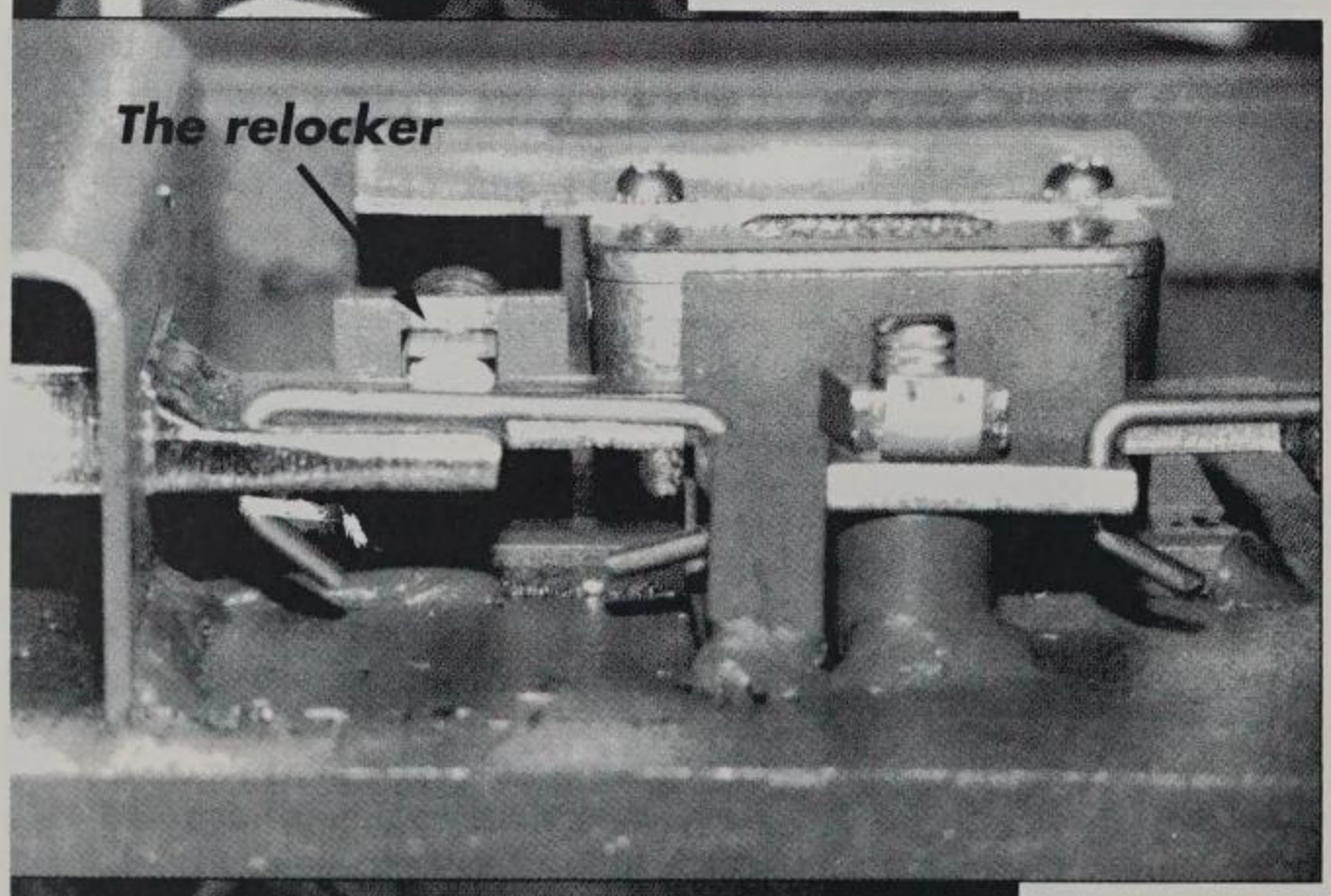
The next step was to insert a length of welding rod into the hole and try to find the relocker. It sounds easy, but it was a bit of a pain. Finally, with just the right bend in the rod, we found the relocker and pushed it back. A hundredth of a second before the rod slipped off the relocker, Jack rotated the handle and retracted the boltwork.

Jack swung the door open and removed the back panel. As we can see in photograph two, the relocker has indeed fired *(see arrow.)* The screws in the back of the lock were tight, but someone at the factory failed to make sure the relocker detent had a good grip on the relocker.

Photograph three gives us a side-view of the door. Once again, the arrow points out the relocker. We can also see what made the relocker a little tricky to get to: the boltwork linkage wire was in the way. But with a little bend in the rod, we went over the top the linkage wire and pushed the relocker back.

Mission Possible. See you next month.

TNL



3. Side view of the relocker.

Diebold Cast Iron Fire Safes

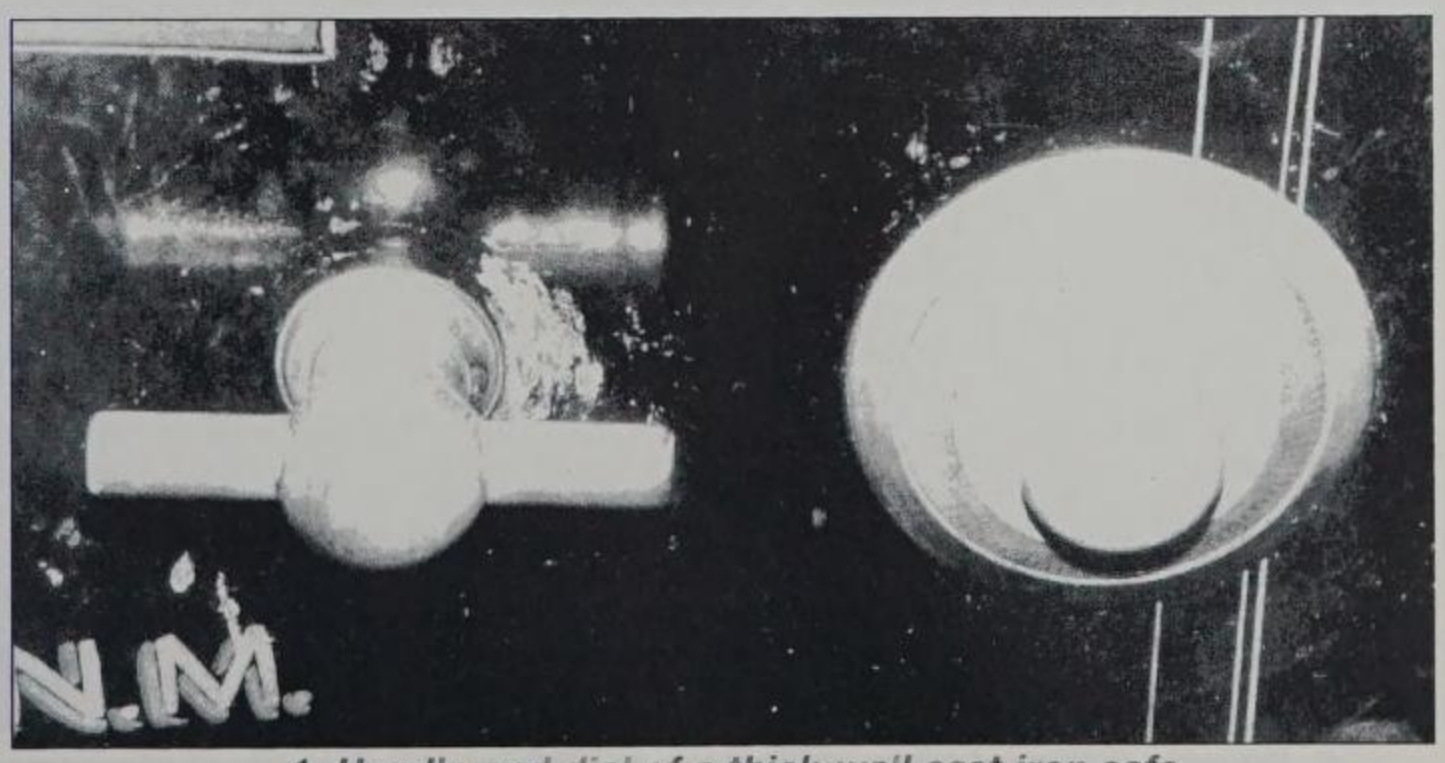
by
Dave McOmie

With the single exception of their Fire/Bankers safes (which we will cover at another time), cast iron Diebold fire safes come in two basic varieties: thick wall and thin wall.

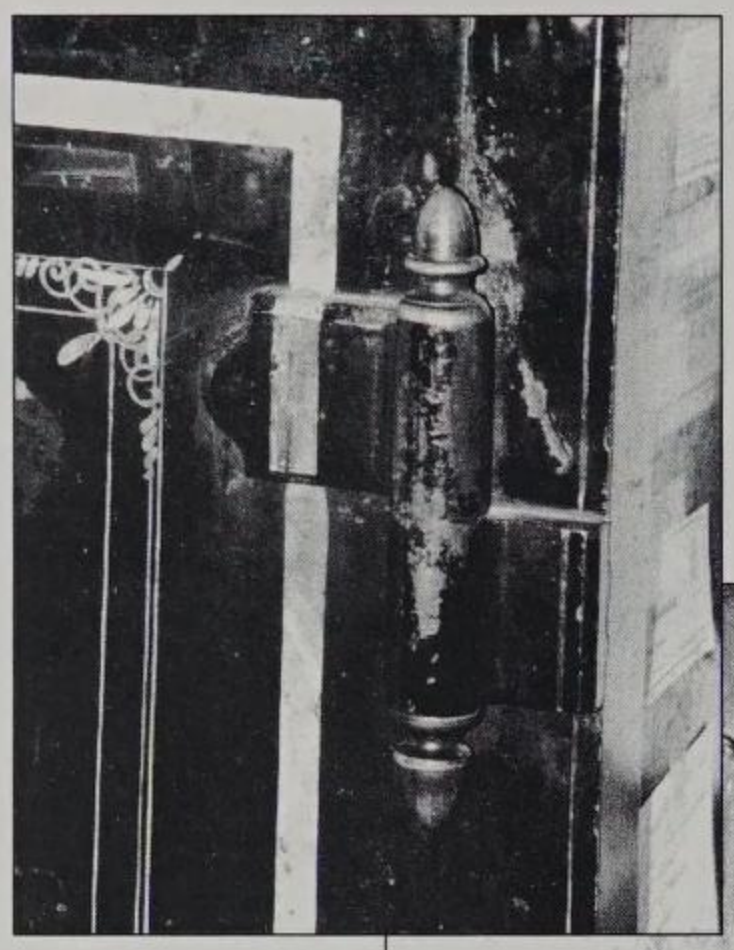
The easy, at-a-glance way to tell thick from thin is via the dial, handle and hinge. The dial and handle from a thick-wall cast iron fire safe is shown in photograph one. The handle is a T-handle, and the 100# dial carries a patent date of May 23, 1871.

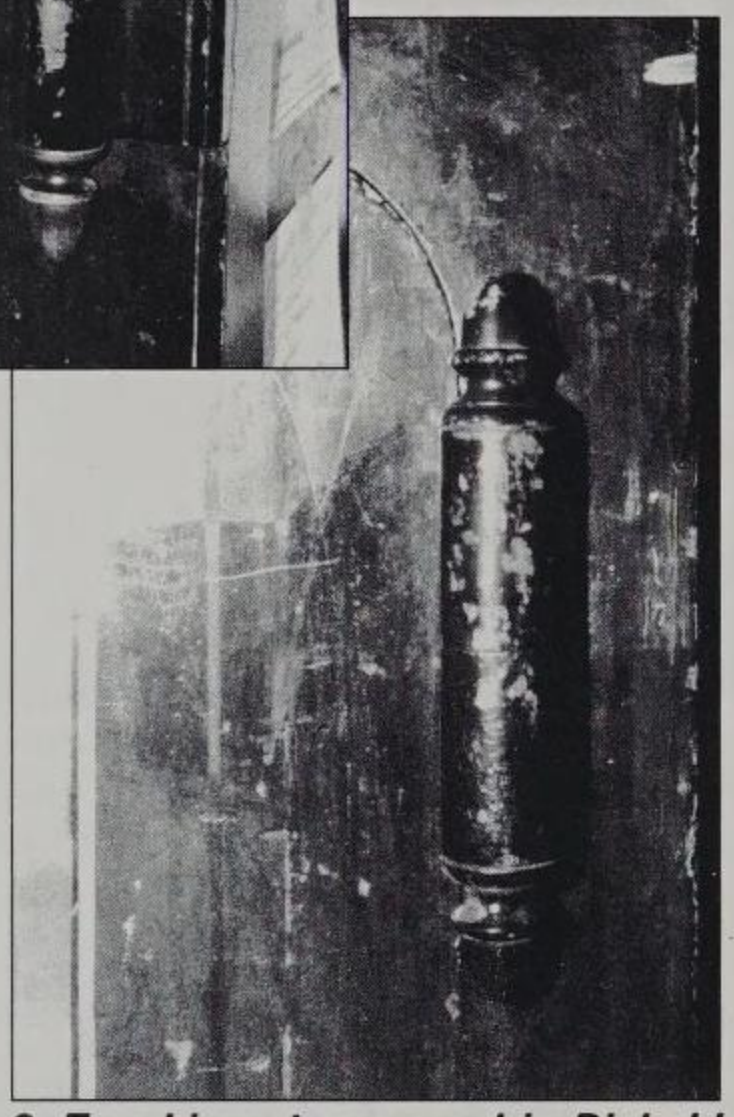
What to expect ... and the surprise Dave didn't expect.

Photograph two shows two types of hinge used in Diebold thick-wall cast iron fire safes. One uses concealed hinge blocks (similar to Barnes), the other uses exposed



1. Handle and dial of a thick-wall cast iron safe.



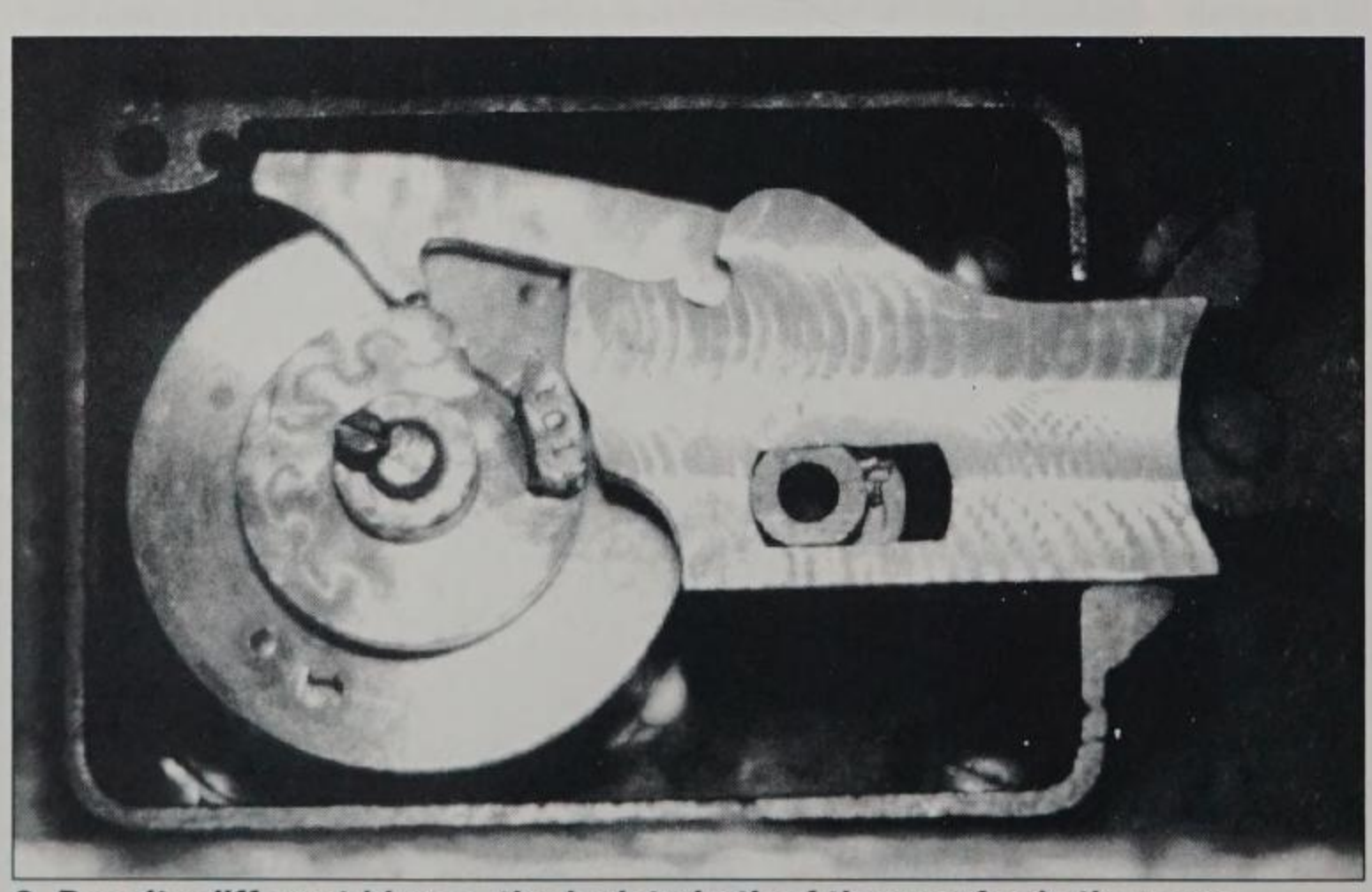


2. Two hinge types used in Diebold thick-wall cast iron fire safes.

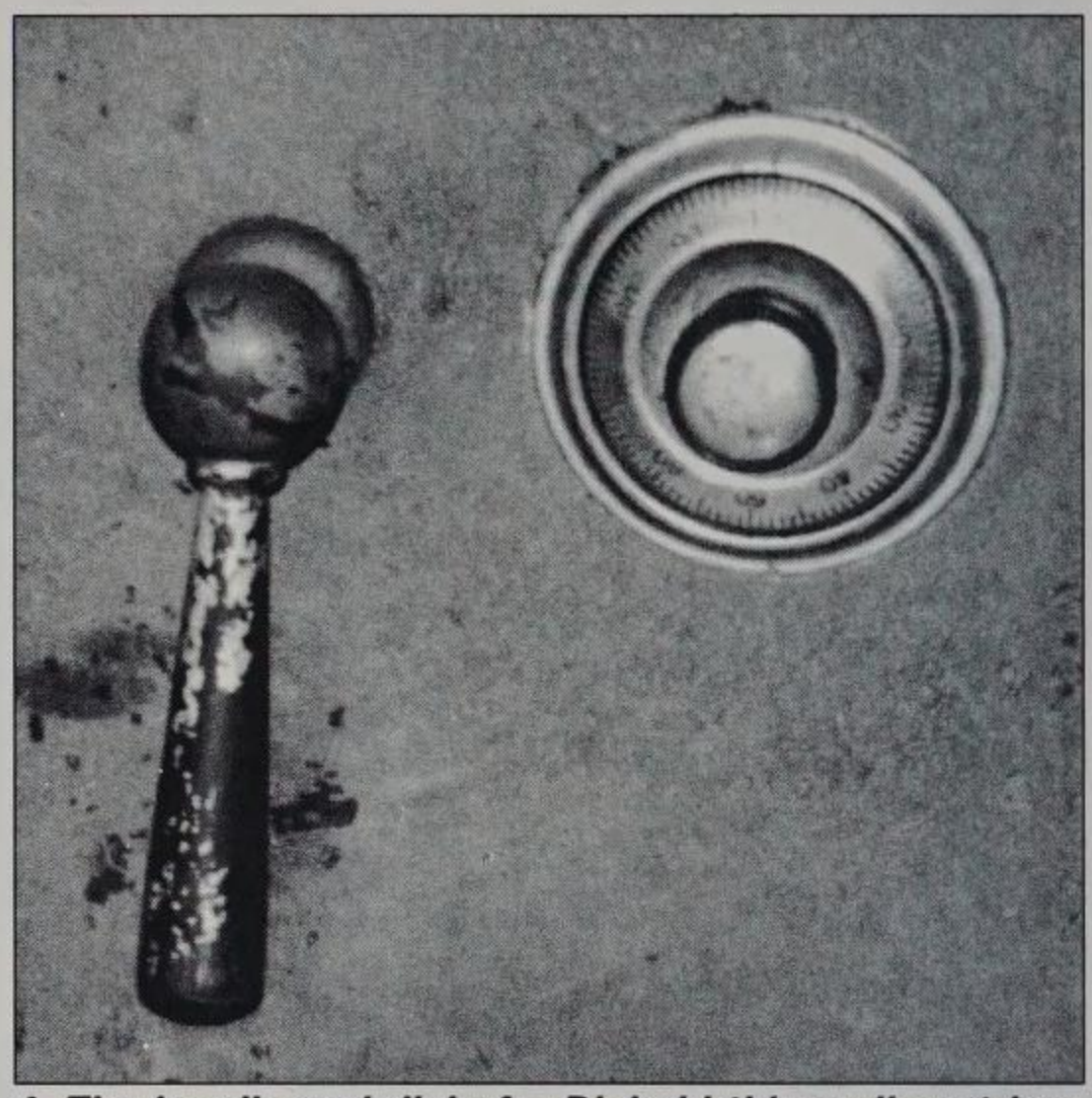
hinge blocks (similar to Cary). Notice that one has rounded door corners while the other has square door corners. But both have the same lock on the inside.

The lock on the inside is shown in photograph three. The three-wheel version is the Eagle 161; the four-wheel version is the Eagle 172.

The Eagle lock in a thick-wall Diebold cast-iron fire safe sits right under the outside skin. The best place to drill one is straight in from just outside the dial ring at about 65. This will bring you into the wide open area in the lower quadrant



3. Despite different hinges, the lock to both of these safes is the same.



4. The handle and dial of a Diebold thin-wall cast iron fire safe.

of the lock. Scope the gates and transfer then around to drop in at about 99. No angle drilling necessary!

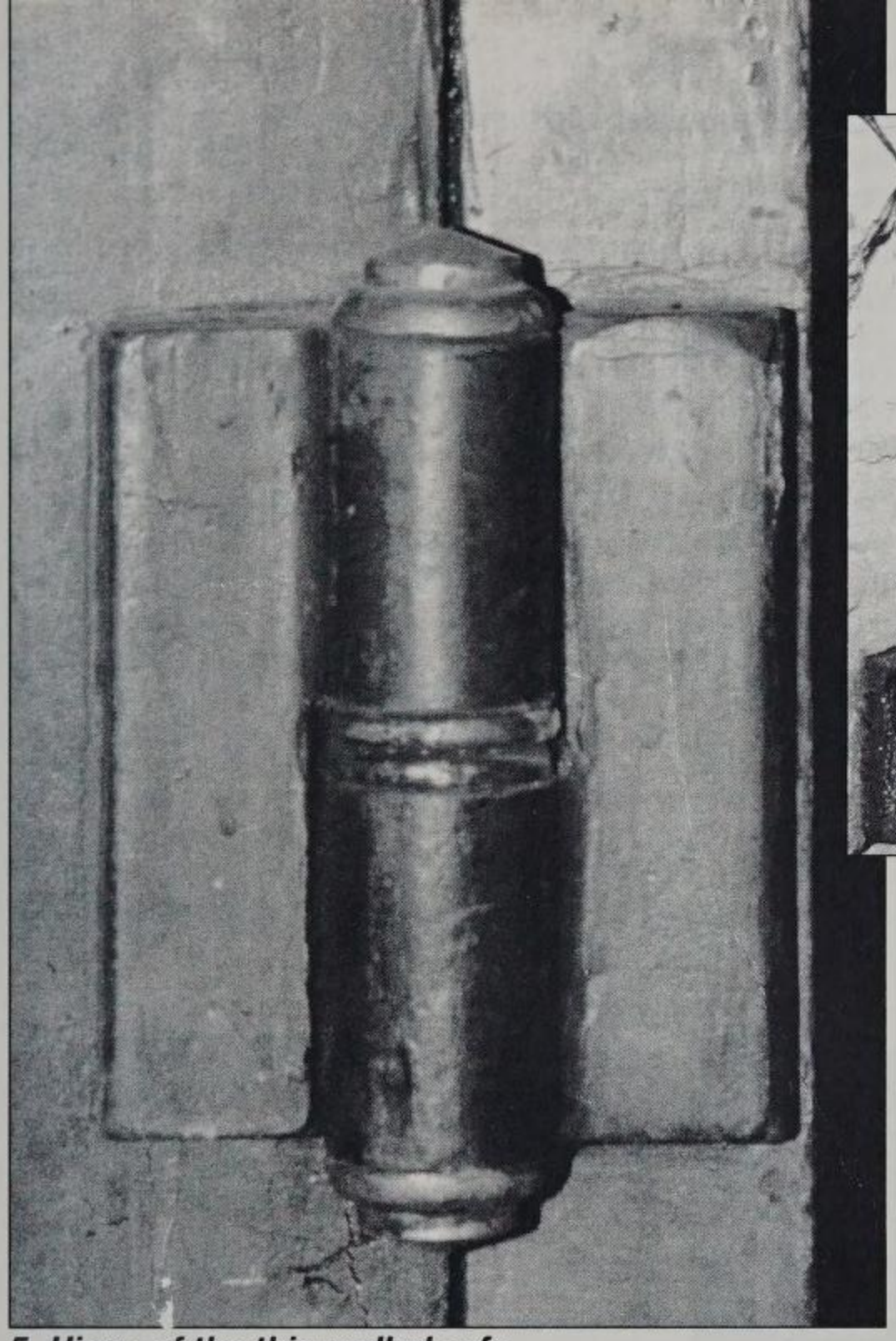
Now let's take a look at a Diebold thin-wall. Photograph four shows the dial and handle from a Diebold thin-wall cast iron fire safe. The handle is an L-handle, and the 100# dial carries no patent date.

The thin-wall hinge is shown in photograph five. This is a double-L hinge (similar to York). I have never seen a thin-wall Diebold cast iron fire safe that did not use this double-L hinge.

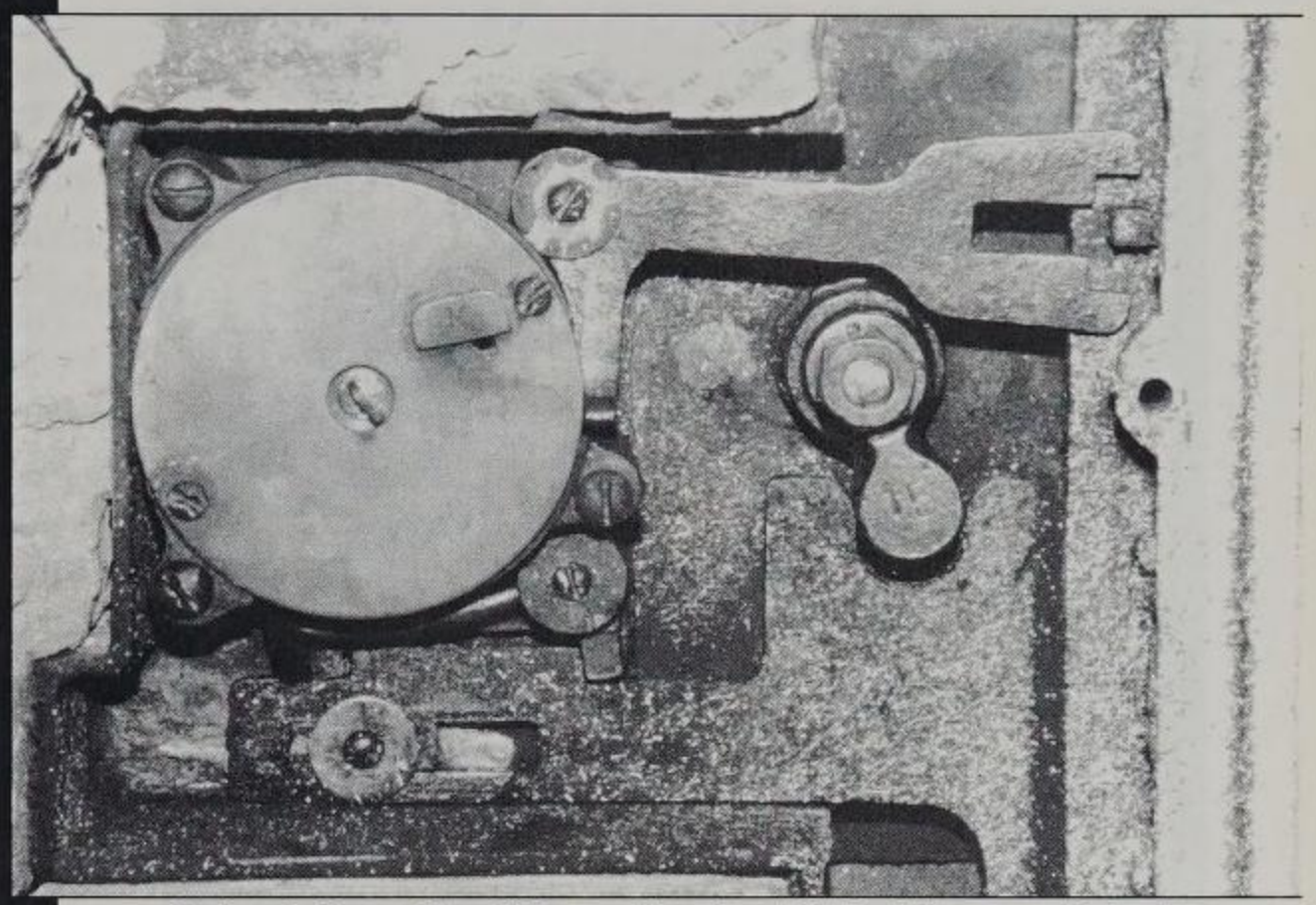
The lock on the inside is shown in photograph six. This is Diebold's own K-lock, with the back cover still attached. Notice the similarity between Diebold's relocker and the relockers used in same-era safes by Mosler, Herring-Hall-Marvin and Halls.

Photograph seven is a close-up of the lock with the back cover removed. There are three wheels and a rear-mounted driver, all with a diameter of about 2-1/2". In this photo, the lock has been opened and the boltwork retracted. Note: when dialing this lock open, the dial does not come to a stop. When the wheel gates and driver gate are aligned with the fence, you rotate the handle, which forces the lever/fence upward into the gates. If the gates are not properly aligned, the fence will not be able to enter the gates and the boltwork will not retract.

The drop-in position (fence location) for this lock is at approximately 44. My favorite way to open this lock is to drill straight in (or up at a slight angle) from just outside the dial ring at 42. Insert a scope into the hole and look up. Peek through the slot between the fence and the lockcase to view the



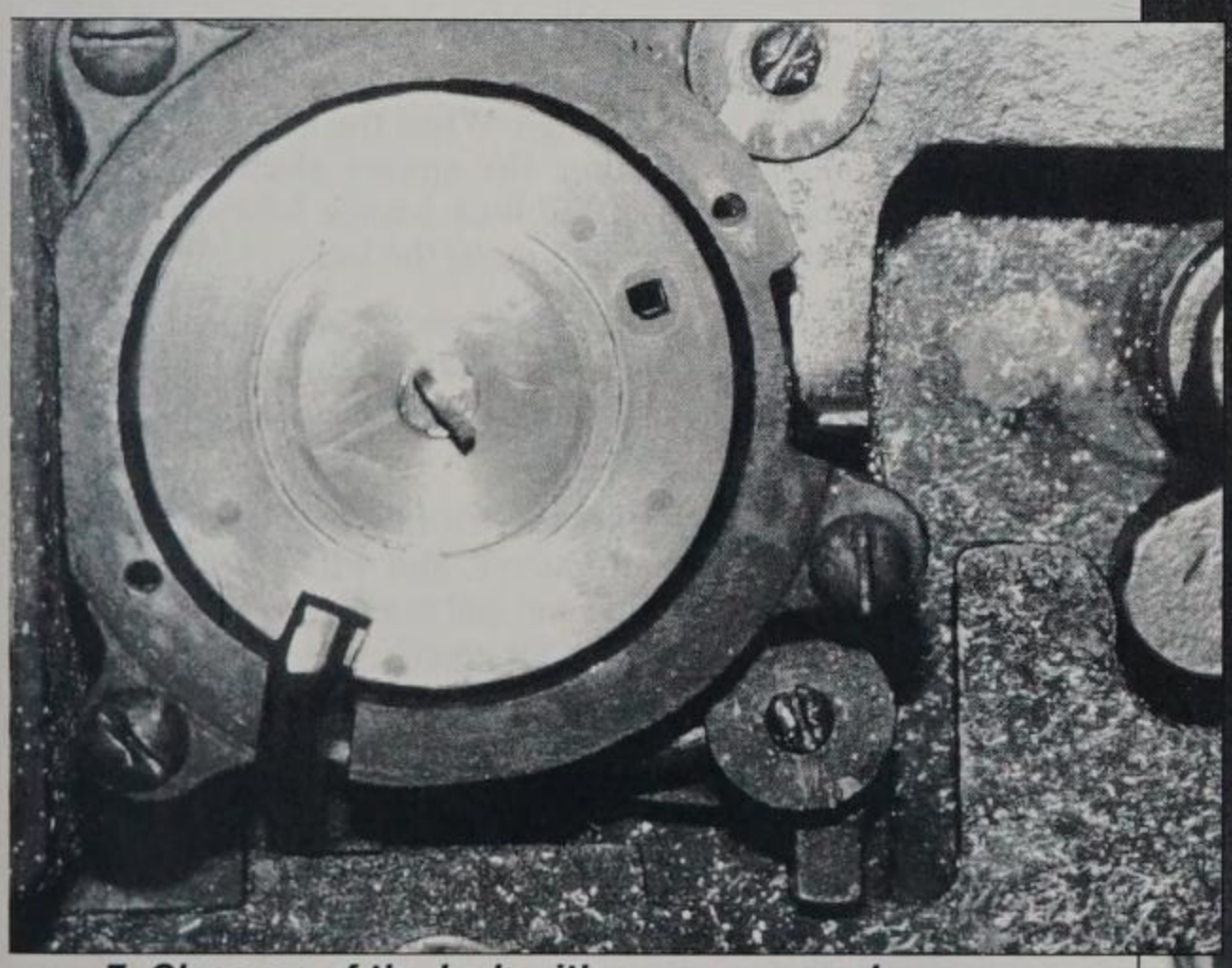
5. Hinge of the thin-walled safe.



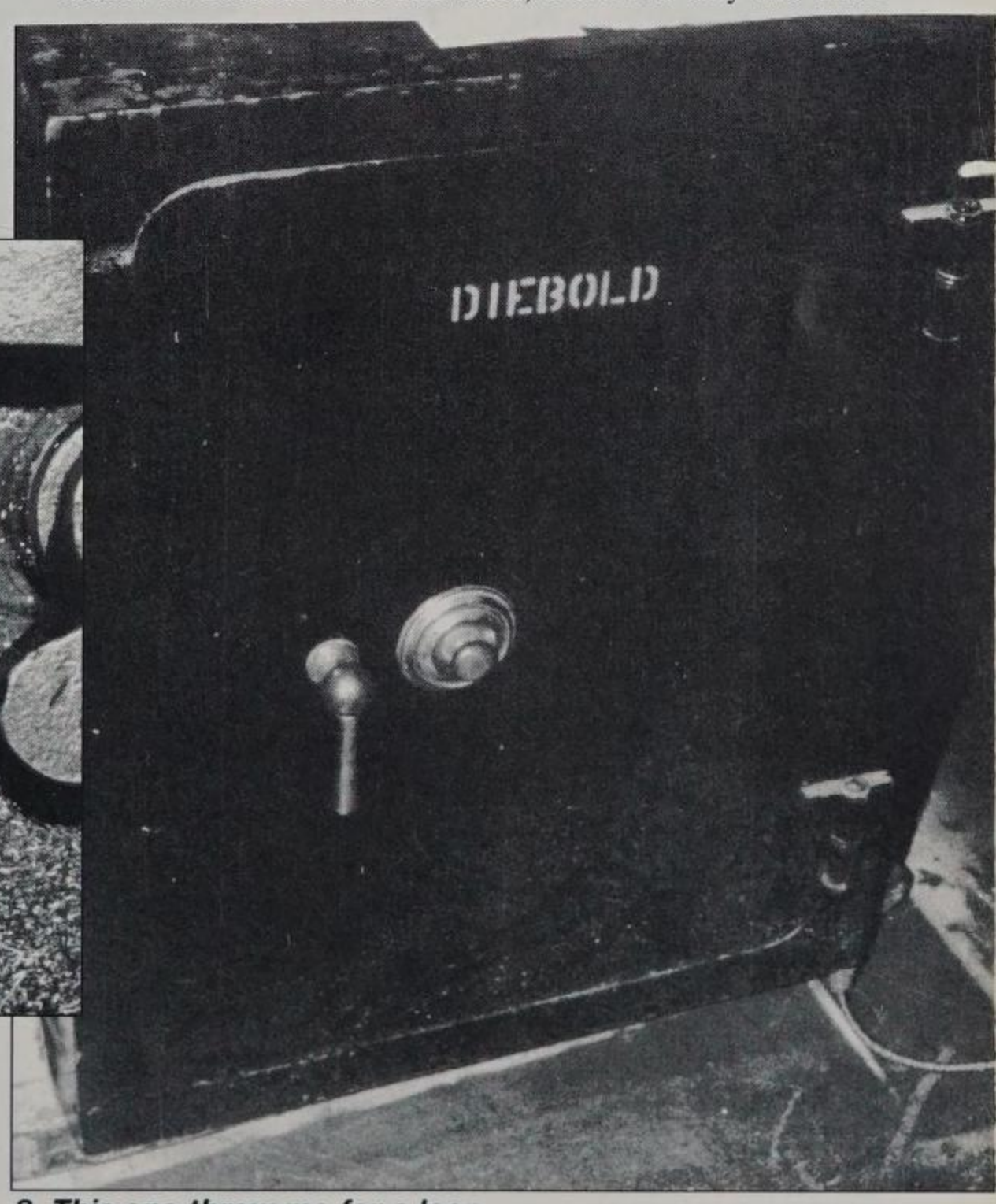
6. Lock from the thin-wall safe - Diebold's own K-lock.

wheels. Line up the gates with the fence and throw the handle—the safe is open!

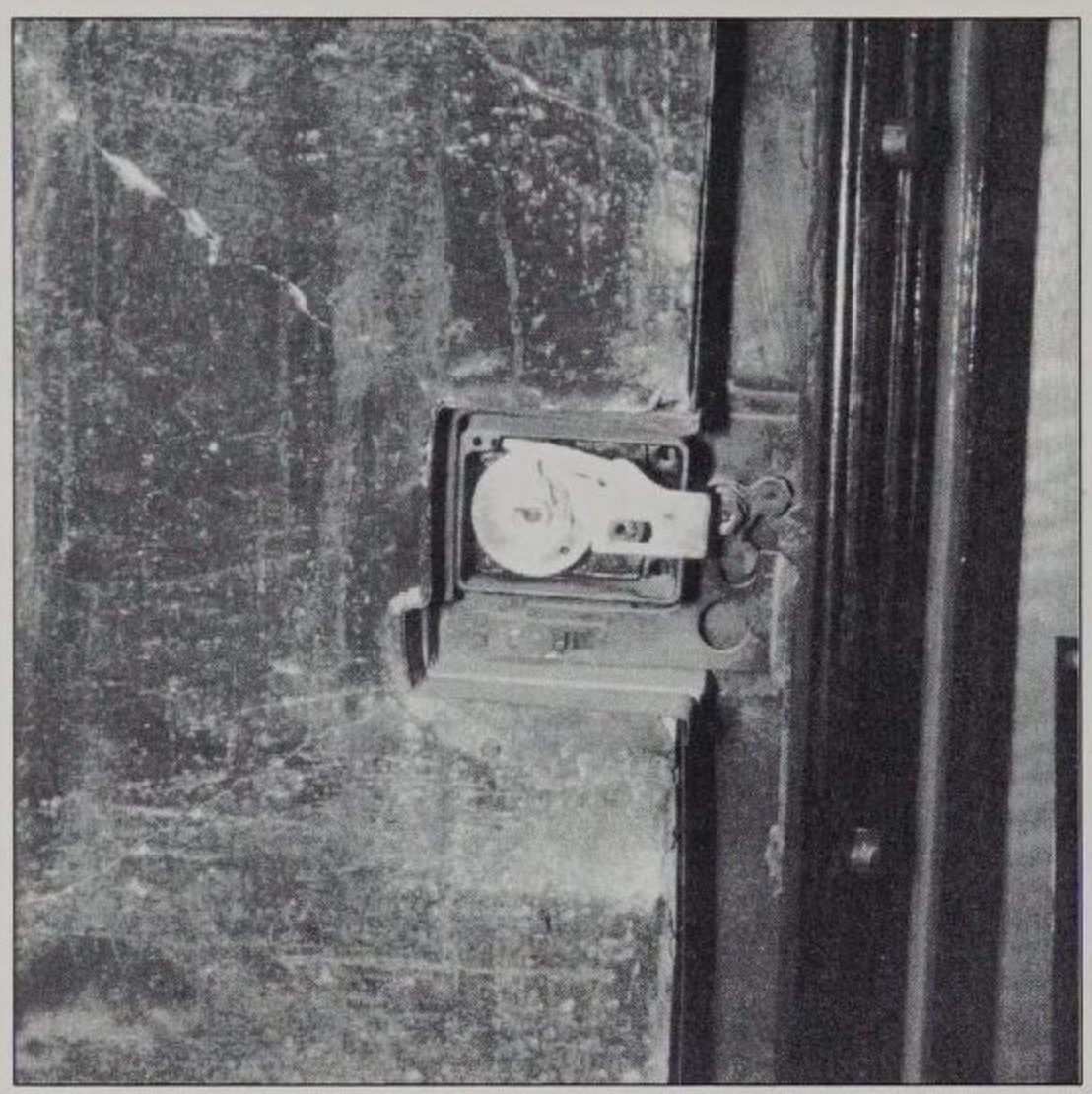
Thus far we have not seen a single photo showing the entire outside of a Diebold cast iron fire safe. The reason is that I wanted to focus your attention on the dial and handle as the best means of identification. Do not become preoccupied with irrelevancies such as the size of the safe, whether it is single or double door, or with unreliables such as whether the door corners are round or square. When it comes to Diebold cast iron safes, there are only two basic



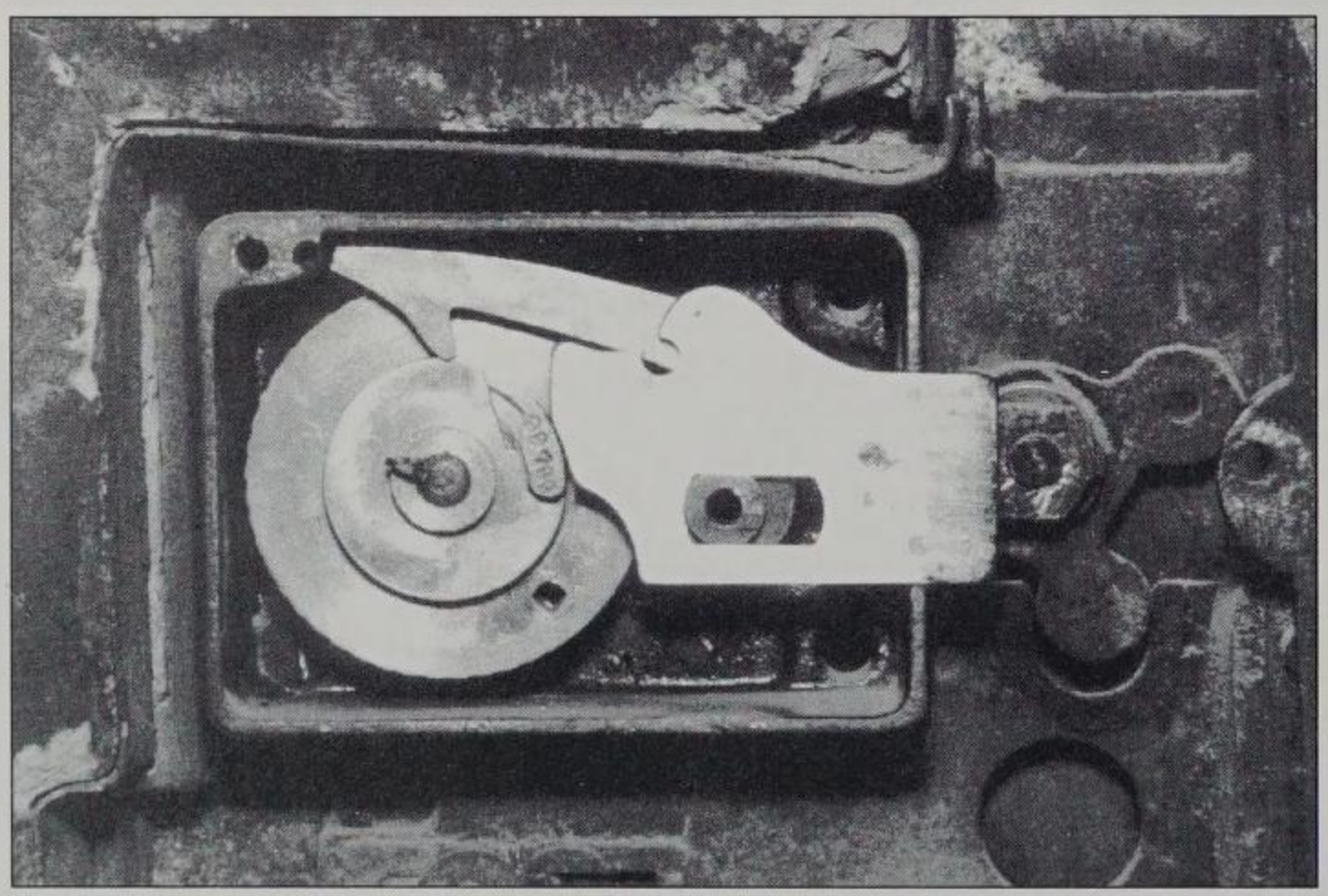
7. Close-up of the lock with cover removed.



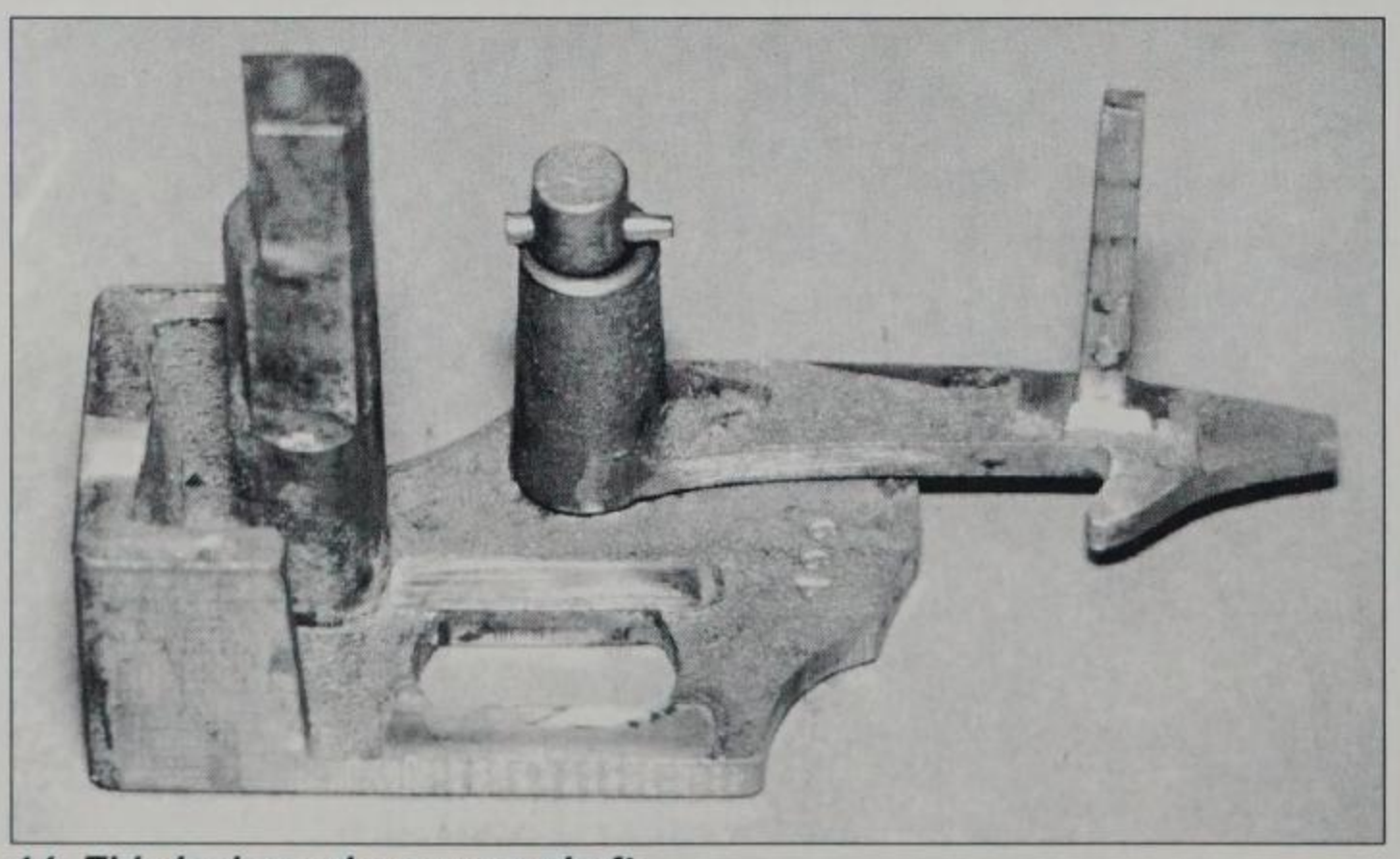
8. This one threw me for a loop.



9. Not a K-lock?



10. This is actually an Eagle combination lock.



11. This lock used a square shaft.

types, and the best way to distinguish them is via the dial, handle, and hinge. Once you have distinguished them, you can deduce the proper drill point and open the safe.

Having said all that, I want now to show you one that threw me for a loop. Take a look at the safe in photograph eight. (I apologize for the sub-par photo, but it was the best I could get). This Diebold cast iron fire safe has the dial and L-handle shown in photograph four, and the double-L hinges shown in photograph five.

The natural conclusion to draw is that it has the K-lock on the inside. That was the conclusion I drew. But then I twirled the dial while applying pressure to the handle. Normally a K-lock will exhibit a bind in the dial when pressure is applied to the handle. That is because when you apply pressure to the handle, the fence is forced up against the wheels, causing a bind that can be felt as you rotate the dial.

But I felt *nothing*! Take a look at photograph nine and see if you can figure out why. The first thing you will notice is that this is not a K-lock. What we can see are two locking bolts on the opening side of the safe, and what appears to be an Eagle combination lock.

In photograph 10 we can see that it is indeed an Eagle lock. At first glance, I thought it was a thin-wall safe set up like a thick-wall. But then I got to looking at the lockbolt of the comb-lock, and I could see that it wasn't blocking anything. Usually the lockbolt will block movement of the tip of a handle cam, but this safe had no such handle cam. So how was it locking?

I had to take the lock apart to see how it was locking the safe. Upon removing the lockbolt/lever assembly from the safe, I was surprised to see a square shaft on the back side. *(See photograph 11.)*

Then I looked at the lockcase and saw a slot in the bottom of the case for the square shaft to go through. When the lock is in the locked position, the square shaft blocks movement of the little handle lobe on the inside of the door *under* the lock.

Some where, some place, some time long ago, this safe was modified. In fact, it was modified at a time when these Eagle locks were still available.

Yesteryear, my friends. Back when a buck was still silver, and when a woman could still cook and still would. Are the good times really over for good?

No way! See you next month. TNL

I shouldn't have written this article. Several people have gotten royally confused about Diebold cast iron fire safes. So let me clear: I have never seen another safe like the oddball shown in photos 8-11. When you run into a Diebold cast iron fire safe, it will almost certainly be either the thin wall or the thick wall. The thin wall safes use the K-lock, the thick wall safes use the Eagle 161 or 162. I'm sorry for the confusion this caused and I hope this helps clear up any remaining confusion.

Cam Punching A Mosler Money Safe!

by Dave McOmie

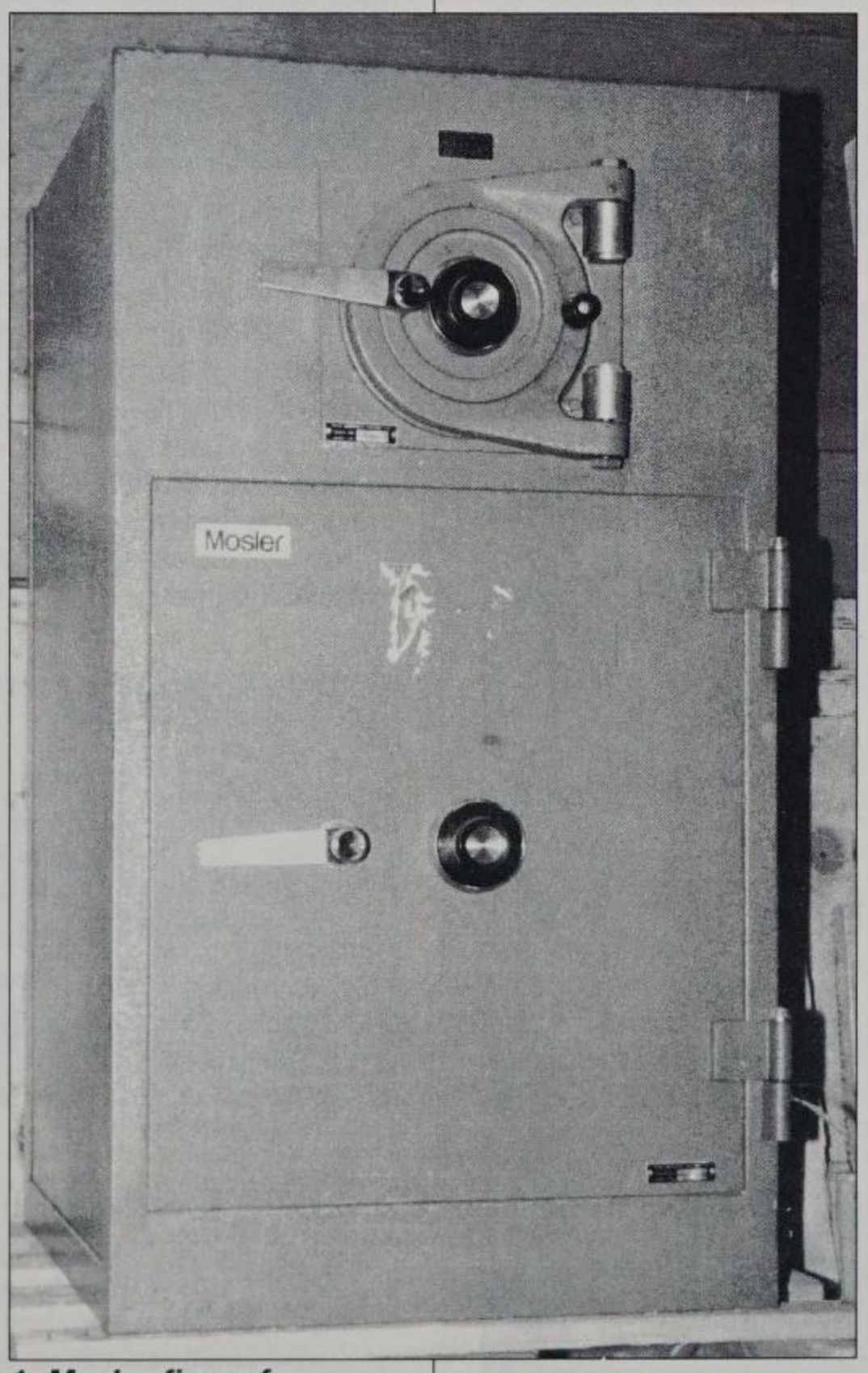
Punch your way into a Mosler safe with Dave.

We tend to think of cam-punching as a technique limited to certain brands of fire safe. Some Amsec, some Gary, some Major, some Meilink, and some Mosler.

For example, imagine that we are called out to open the Mosler fire safe shown in photograph one. The first thing we want to do is identify the lock. The new-style silver handle and the plastic spyproof dial, narrows the lock down to either a 120 or a 302. The dial gives us no further clue – it does not pull out at zero, and it does not make a click-click sound as we rotate it.

If there were no further clues to be gleaned from this safe, I would bet that the lock is a CD302, because of the silver handle. Many of the Mosler fire safes that came with a CD120 used a silver handle that is identical to this one, but with the addition of a streamlined black handle grip.

There is, however, another clue to be had. Here is a little-known tip that can save you hours of frustration: *In the case of Mosler, the same series of lock was used in the fire safe that was used in the lug door!* If the lug door has a 302 series lock in it, the chances are excellent that the fire safe will have a 302 series lock in it. Ditto for the 120. And ditto in reverse – if the fire safe is open and you are there to open the lug door, take a look at the lock in the fire safe to help identify the lock in the lug door.



1. Mosler fire safe.

So here we are. We need to see which lock is in the lug door to help us identify the lock in the fire safe. We can remove the back panel of the lug door and have a look. Before we do that, let's spin the dial and see if we get another clue. As we spin the dial, we hear a "click-click" sound. That indicates an MR302. Bingo. We can now make the reasonable inference that the lock in the fire safe is also a 302 series lock. The dial on the fire safe does not go "click-click." That is because it is a CD302, not an MR 302. Mosler rarely put MR locks in fire safes.

Why is it important to distinguish between the 120 and the 302? Because the drill points are radically different.

The drill point for a great scope hole in a RH-mounted 120 is 2 x 1-1/8."

The drill point for a great scope hole in a RH-mounted 302 is 85 x 1-3/8."

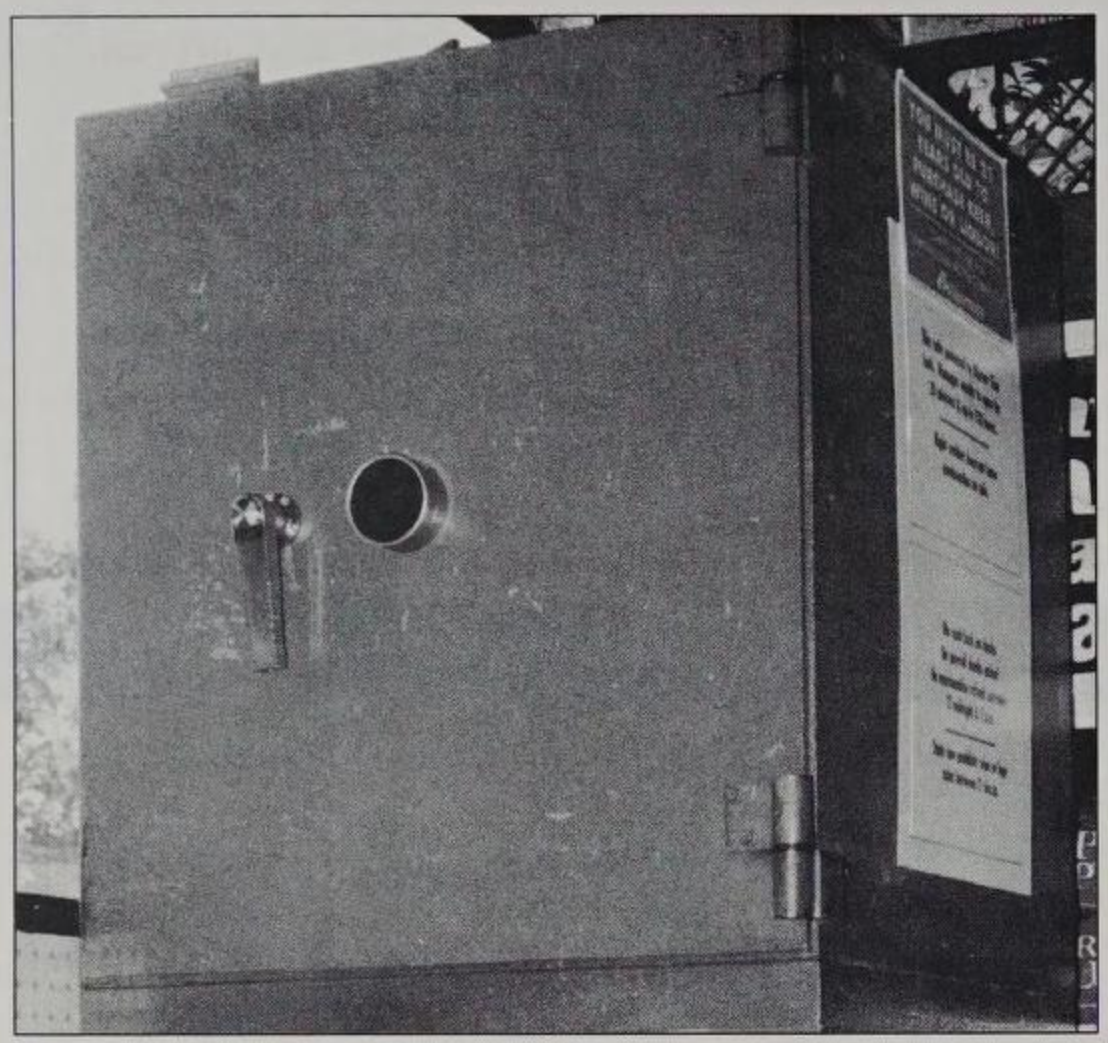
The drill point to punch the handle cam on a Mosler fire safe with a RH-mounted 120 is 2" LC, 3/4" up.

The drill point to punch the handle cam on a Mosler fire safe with a RH-mounted 302 is 2-3/4" LC, 3/4" up.

As you can see, it is important to properly identify the lock, otherwise you run the risk of using an incorrect drill point. And that can sometimes be the beginning of a nightmare opening.

Let's look inside the Mosler fire safe to see how cam-punching works. Photograph two shows us the inside with the back panel removed. Sure enough, there is a RH-mounted 302. The boltwork is fairly simple, with one bolt on the opening side and one each top and bottom. There is no active bolt on the hinge side.

Below the lock and handle cam is the long external relocker. In all my career, I have only had to drill for one of those relockers. They are extremely difficult to set off – a burglar must attempt to punch the whole lock off the door for the relocker to fire. And that, as you can guess, is something that burglars rarely do, especially on a 302. If the spindle is punched, the external relocker will not fire. The back cover

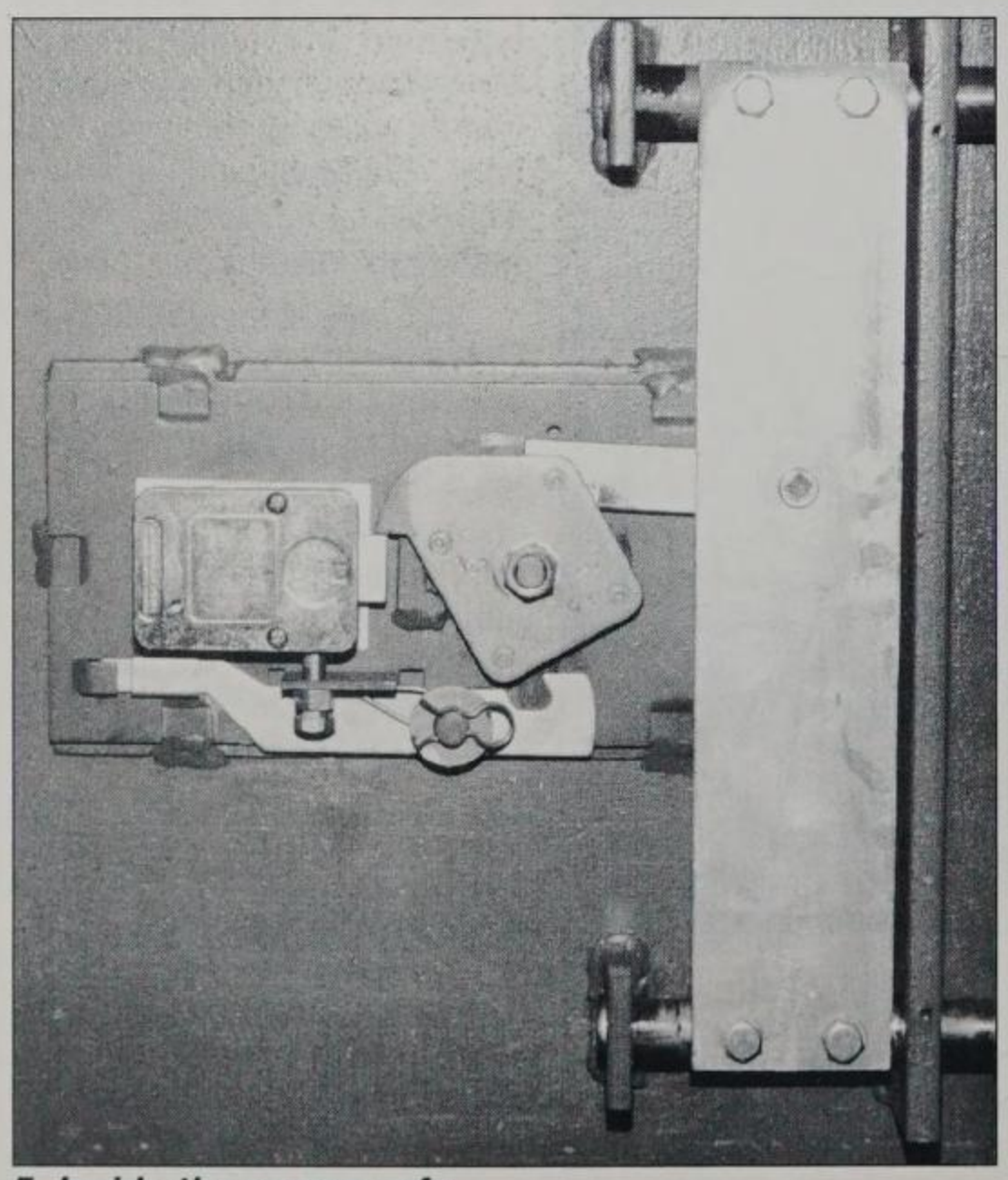


4. Upper door of a Mosler safe.

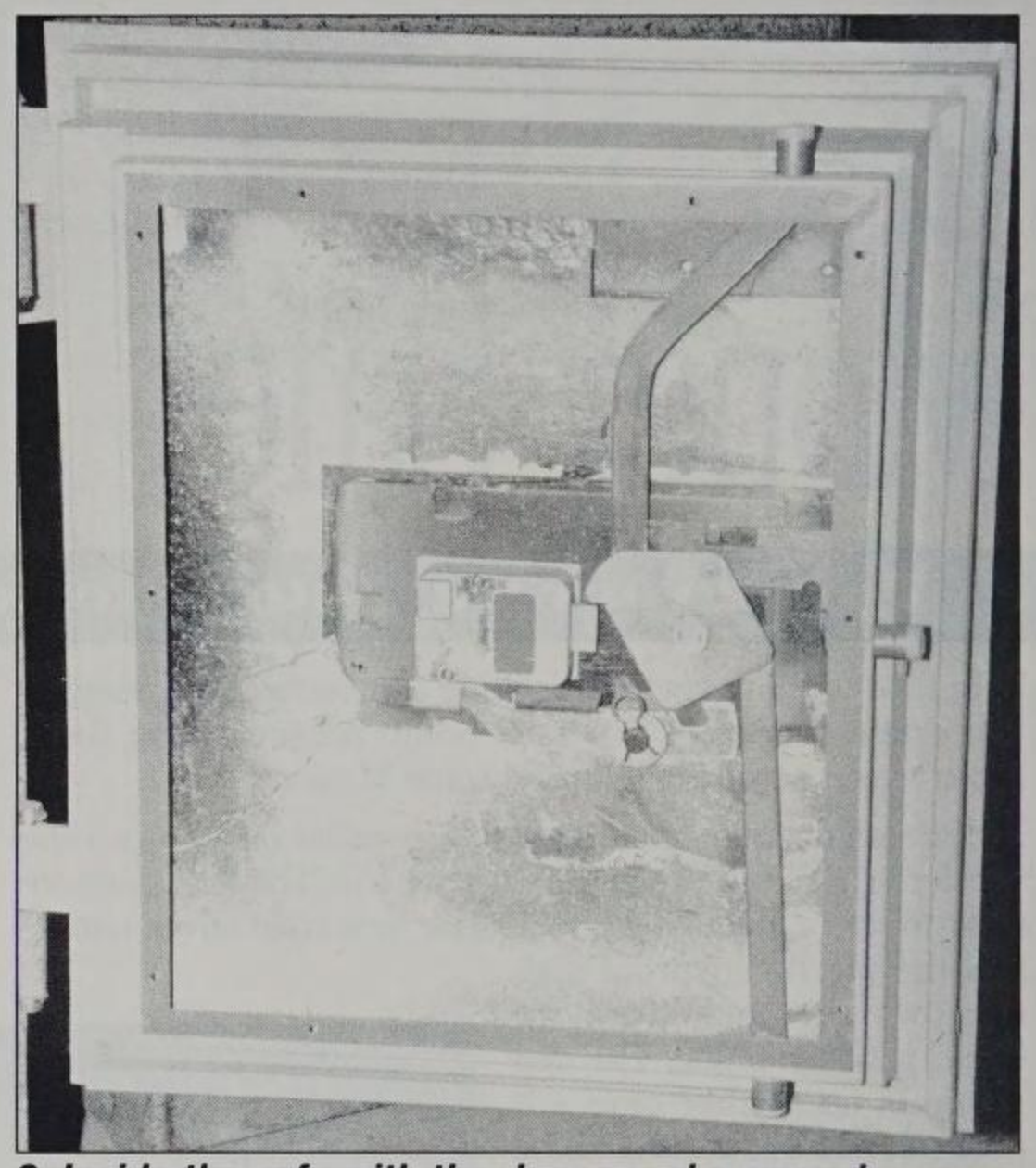
hammer and punch. Although there aren't a lot of these super-duper handle cams out there, you should be aware of their existence. I have run across them in a *few* Mosler fire safes with B-6 locks on the inside, and a few with 120 locks on the inside. But most do not have the nightmare handle cam. Never have I seen the double-thick handle cam on a Mosler fire safe with a 302 on the inside.

Another word of warning: Most Mosler single door fire safes built in the last 10 years have the lock mounted VU, not RH. See my books for details.

Most of us like punching handle cams on fire safes whenever the right situation arises. Obviously this is not the technique of choice on a pristine fire safe, because the repair



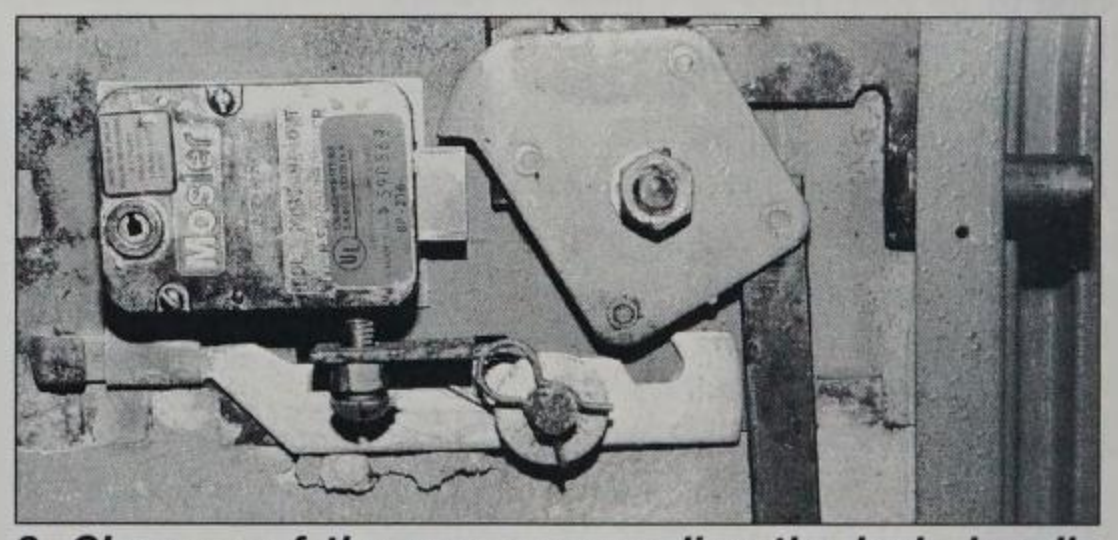
5. Inside the money safe.



2. Inside the safe with the door panel removed.

of the lock will come off and set off the internal relocker of the comb-lock, but this will not affect the external relocker.

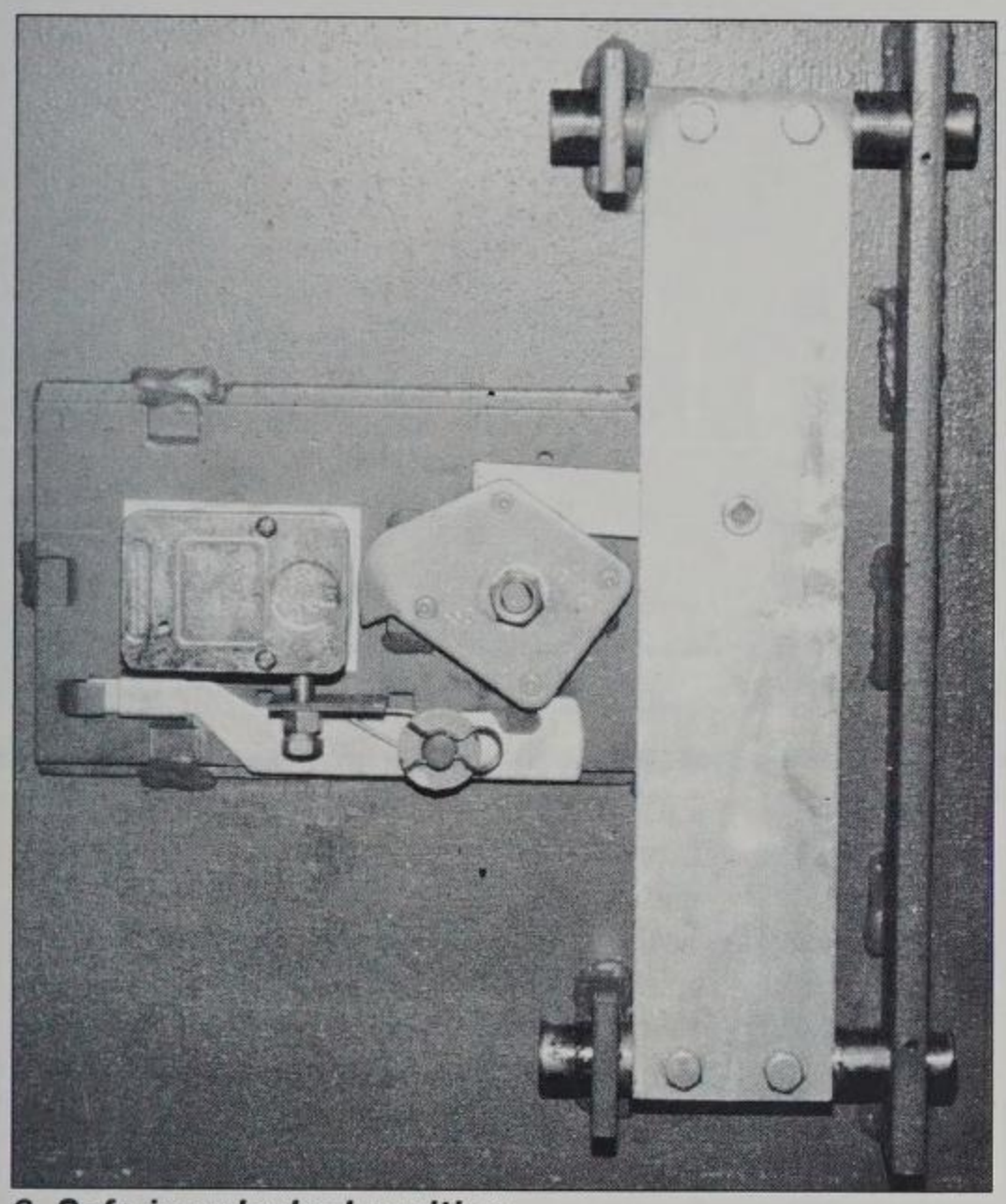
In photograph three we have a close-up of the area around the lock, handle cam, and relocker. Our target for cam-punching is the tip of the handle cam, just above the lockbolt. Once the hole is complete, we double-check our accuracy by peeking in the hole while wiggling the handle. If we see a silver-colored object moving as we wiggle the handle, we know we are on the handle cam. If we peek in and see a brass-colored object, we will be very careful because it might be the lockbolt!



3. Close-up of the area surrounding the lock, handle cam and relocker.

Once we have verified that our hole has been properly placed, we insert a long flat punch into the hole and give it a couple of shots with a two-pound hammer. If we have an assistant, we have him/her hold slight-but-steady counter-clockwise rotational torque on the handle. As soon as the tip of the handle cam has bent inward far enough to bypass the lockbolt of the combination lock, the handle will rotate and retract the boltwork – the safe is open.

A word of warning: There are a few Mosler fire safes out there with double-thick handle cams. Because of the thickness, they are extremely difficult to bend with a



6. Safe in unlocked position.

cannot be confined under the dial ring. But in cases where repair is not a major concern, or where a thick aluminum decal can be riveted in place over the repair site, cam punching is a good choice.

You do not have to limit cam punching to fire safes! However, it can be used on certain make and model *money safes*. There are two requirements: (1) there must be a handle cam to punch, and (2) there must not be a relocker that will fire if the handle cam is punched.

A prime candidate is shown in photograph four. This is the upper door of a Mosler supermarket safe. The dial is a LaGard, so we can guess that it has been replaced. We spin the dial of the lug door on bottom. It goes "click-click" so we know this safe was originally equipped with 302 locks.

The nice thing about using the cam-punching technique on this money safe is that we do not have to mess around trying to determine whether the lock is the original CD302, or a replacement LaGard (or S&G). The drill point for punching the handle cam is the same for all three!

Photograph five takes us inside the B-rate money safe. Notice the remarkable similarities between the layout inside this safe and the layout in the fire safe we previously examined. Uncanny, isn't it? In this photo, the safe is in the locked position—the lock is locked and the boltwork is extended.

In photograph six the lock has been unlocked and the boltwork retracted. Notice how the handle cam pivoted downward as the boltwork was retracted.

The moral of the story: make proper identification and be on the lookout for new applications for old opening techniques. Old dogs *can* learn new tricks!

See ya next month. TNL

Some like cam-punching, some don't. I love it!

Potpourri of Safes

by
Dave MC Omie

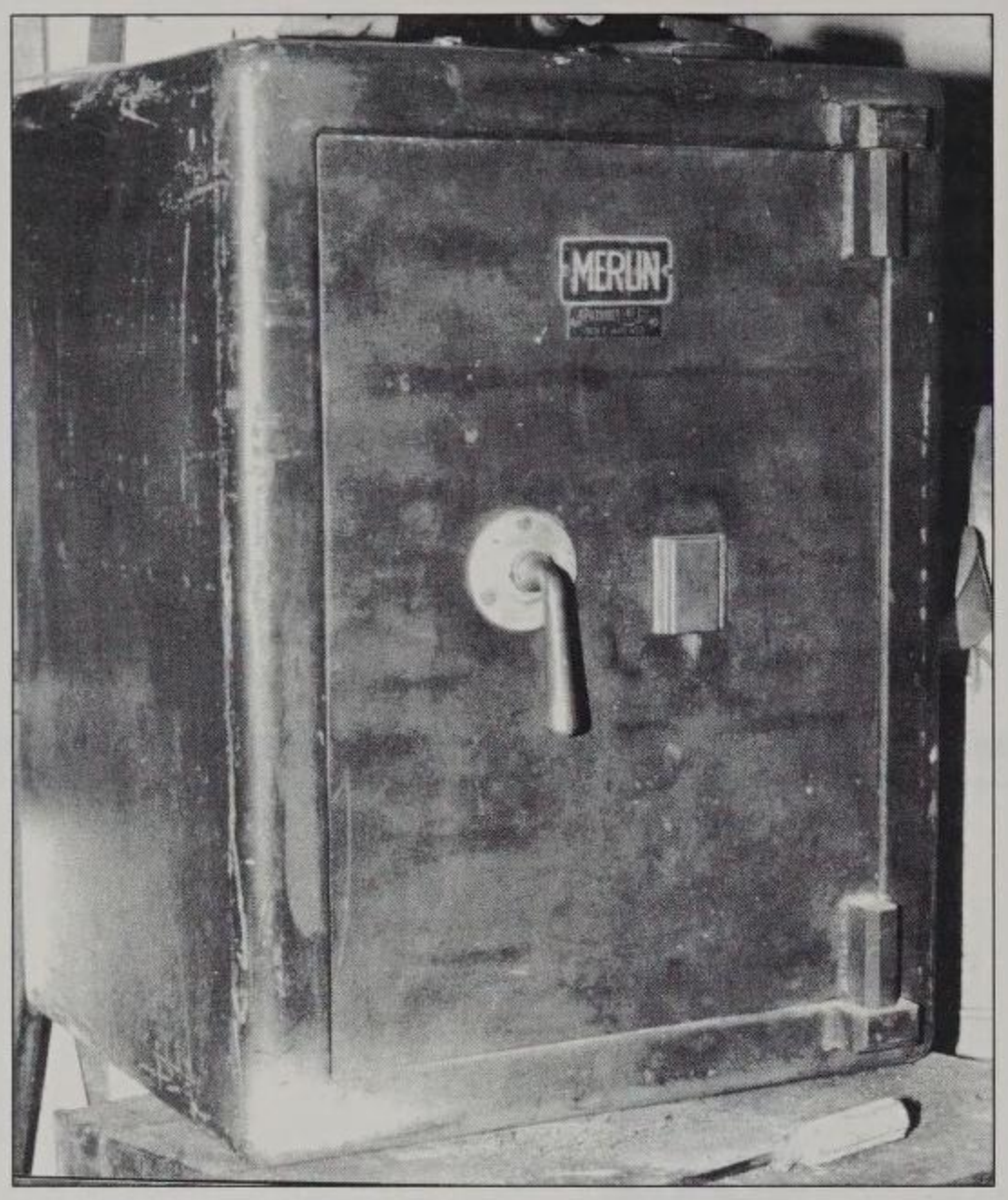
This month we are going to go to England and to France. Not literally of course, but via two safes that were opened, by Don Spenard and Dave Richardson, respectively.

The English safe is the Merlin shown in photograph one. A Seattle importer needed it opened for resale, but Don didn't have any information on it. What to do? What any good networker does: contact somebody in his network that does have information on the Merlin.

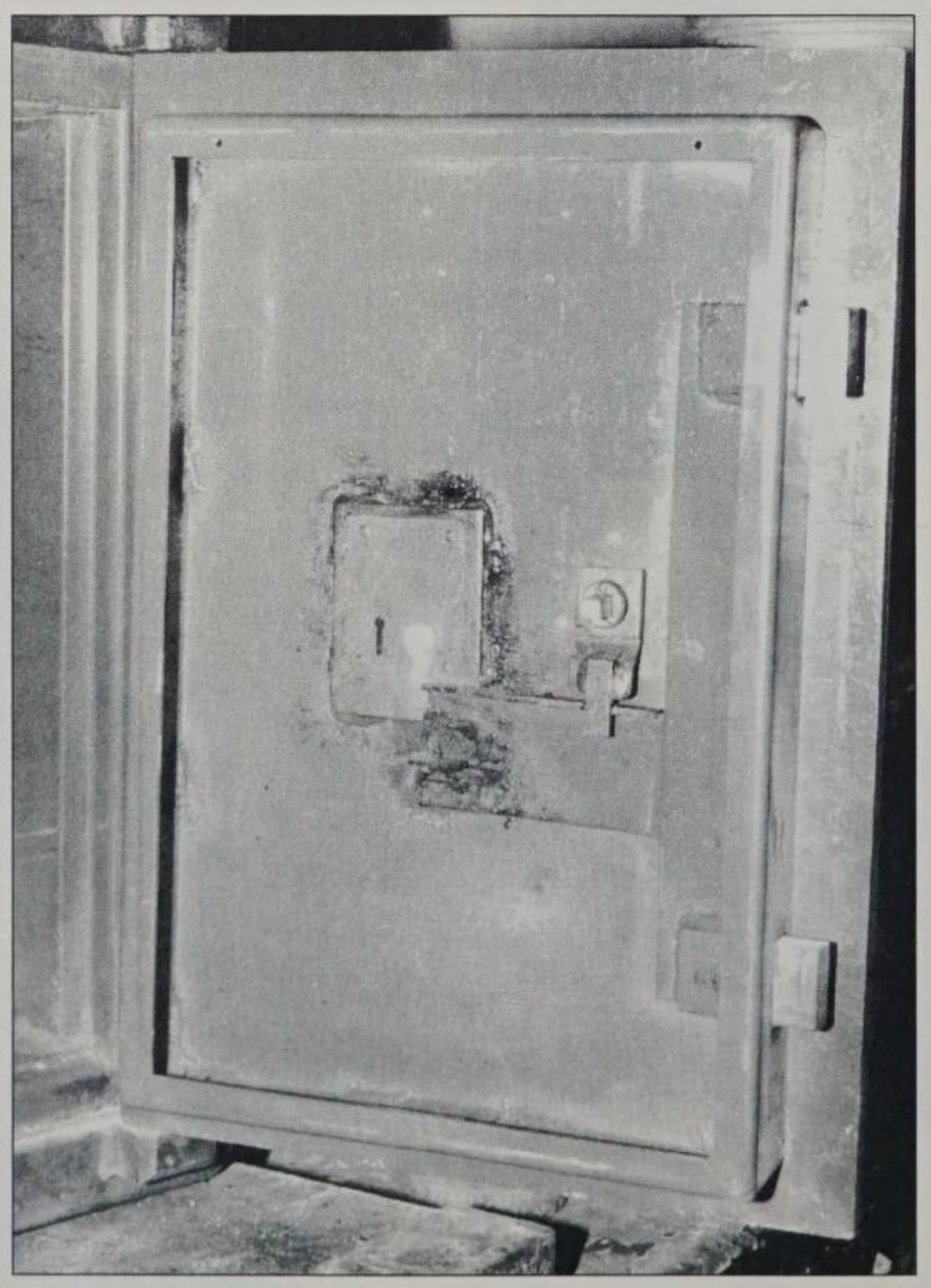
The Merlin is obviously English, so Don faxed Geoff Cookson, one of the UK's best. Geoff answered quickly: the Merlin is actually a Milner's, with a Milner's 6-lever keylock mounted vertical down and a Milner's drill point of: 3/4" left of keyhole center, 3/16" down.

Don drilled it as per Geoff's instructions and came out perfectly, right at the stump. He used an L-wire to lift the levers one at a time, starting with the lever closest to him. One by one, the gates aligned with the stump, and Don trapped the levers in position by poking a wire through the gates. When all six gates were lined up, Don used his L-wire to put a little unlocking pressure (what the purists call "rotational torque") on the lockbolt. A little wiggling and a little jiggling, and the lockbolt retracted. The Mighty Milner/Merlin was open.

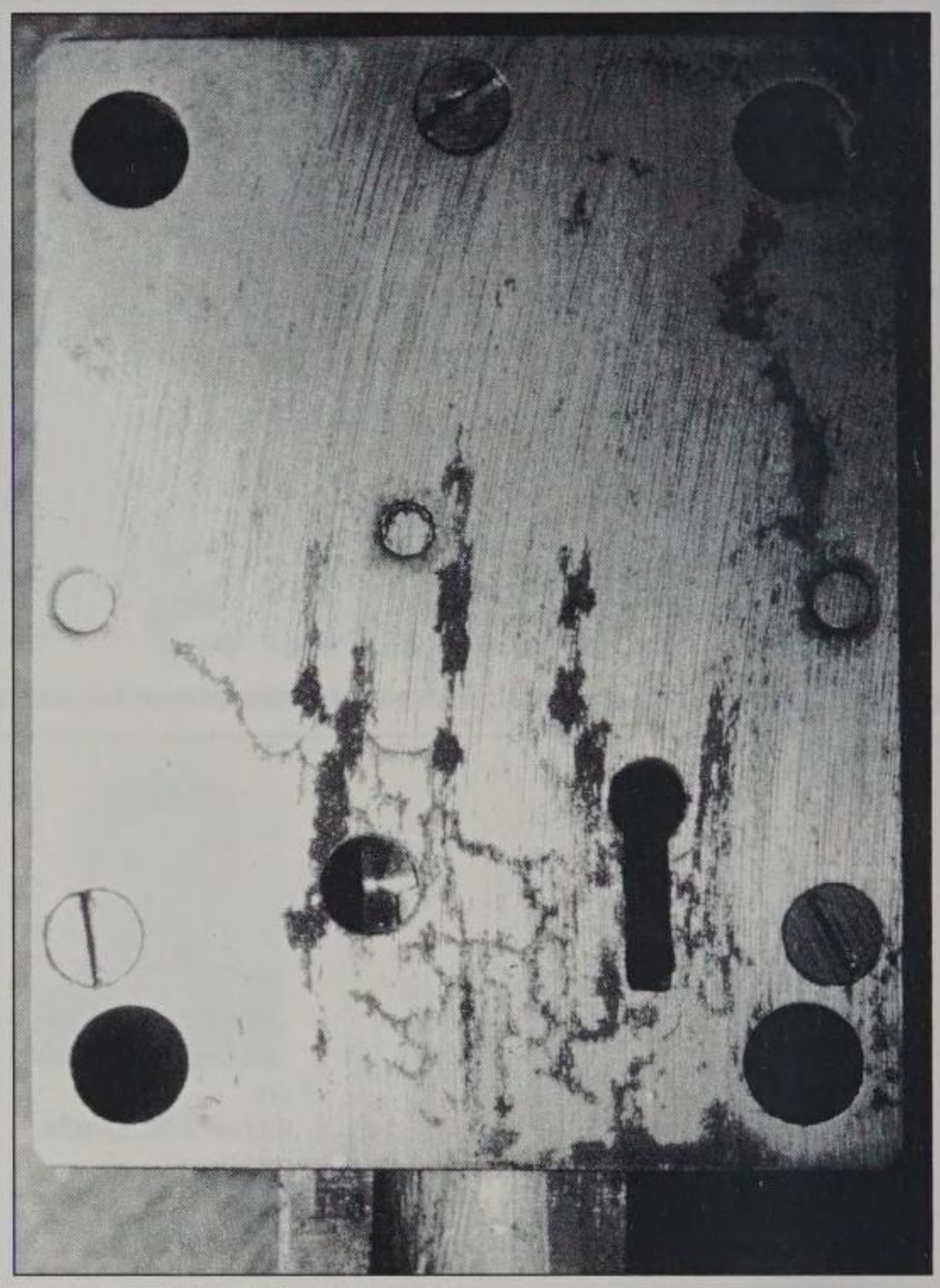
Photograph two shows the inside of the door with the lock removed. There are two rectangular locking bolts (door bolts) on the opening side. Look closely and you can see Don's repair site just to one side of the keyhole.



1. A Merlin's, English safe.



2. Inside the Merlin's door with lock removed.



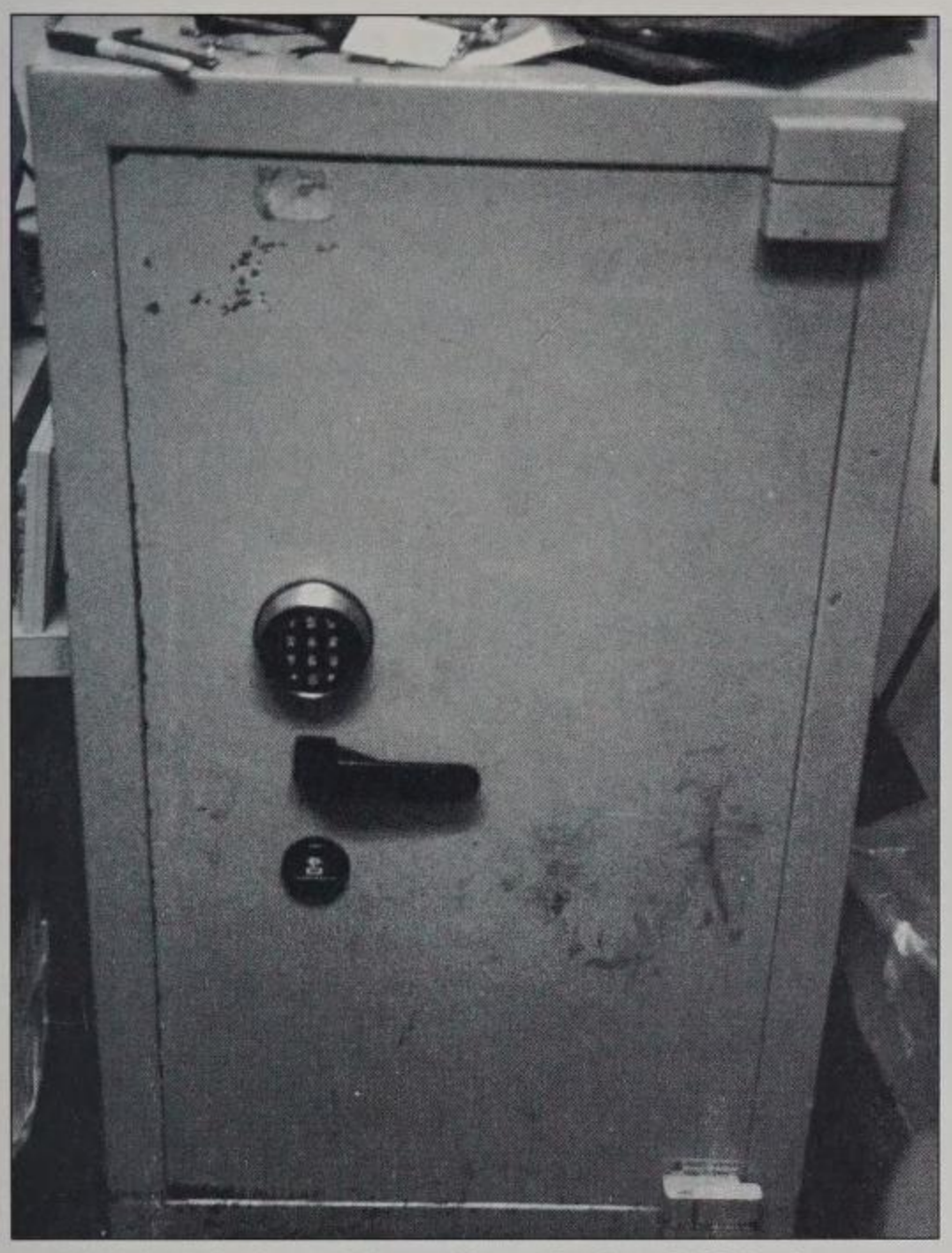
3. A Merlin's 6-lever keylock.

Photograph three shows the keylock. Look to the left of the keyhole and you will see the perfectly-placed hole that opened the safe. Well done, Don and Geoff. This opening is just more proof of the value of networking.

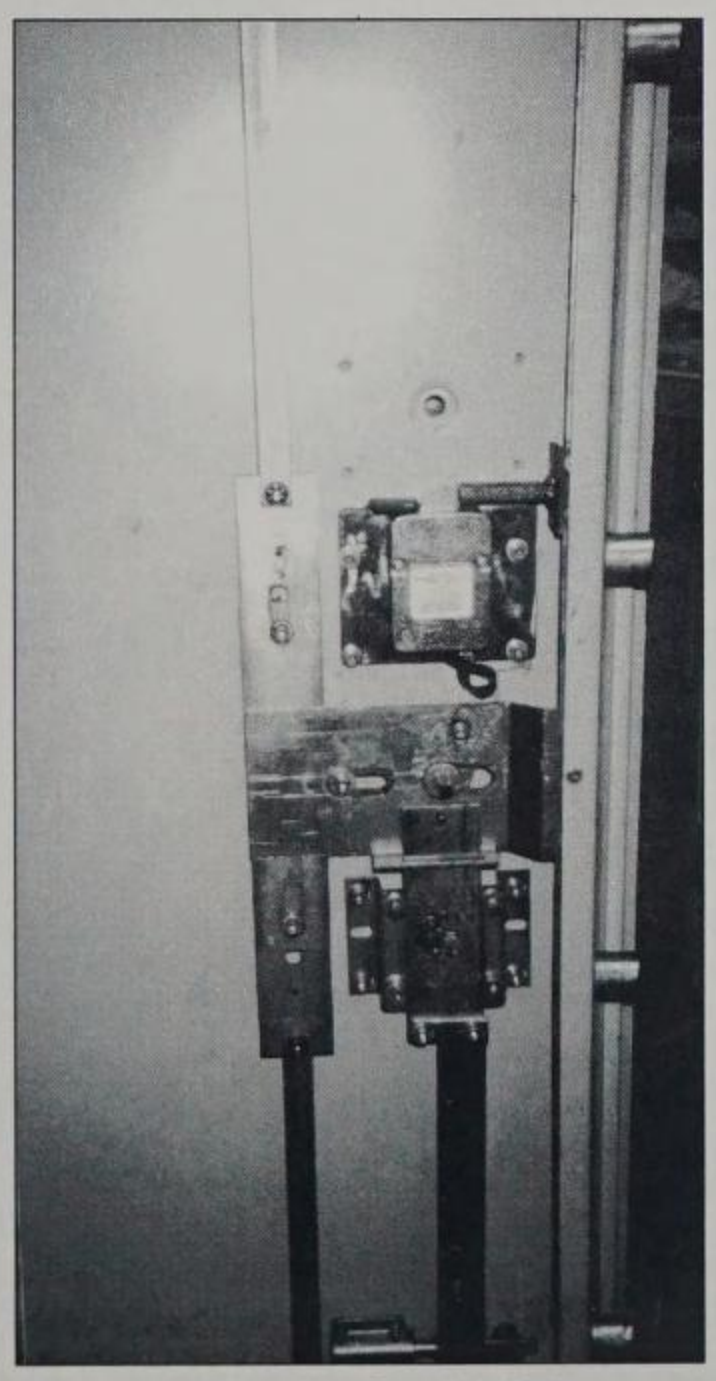
Now we hop the river from England to France, and visit a Fichet that Dave Richardson opened and repaired (see photograph four). The problem was a malfunction in the C2C combination lock, so Dave drilled and punched the upper wing of the lockbolt in far enough to bypass the boltbar. The safe was open.

Dave wasn't about to trust the malfunctioning C2C however. What to do? Well, given that Dave is a certified welder, a first-rate safe technician, and in general a clever guy, he first removed the malfunctioning lock. Using the mounting dimensions of the C2C, Dave manufactured a mounting plate that would bolt right on.

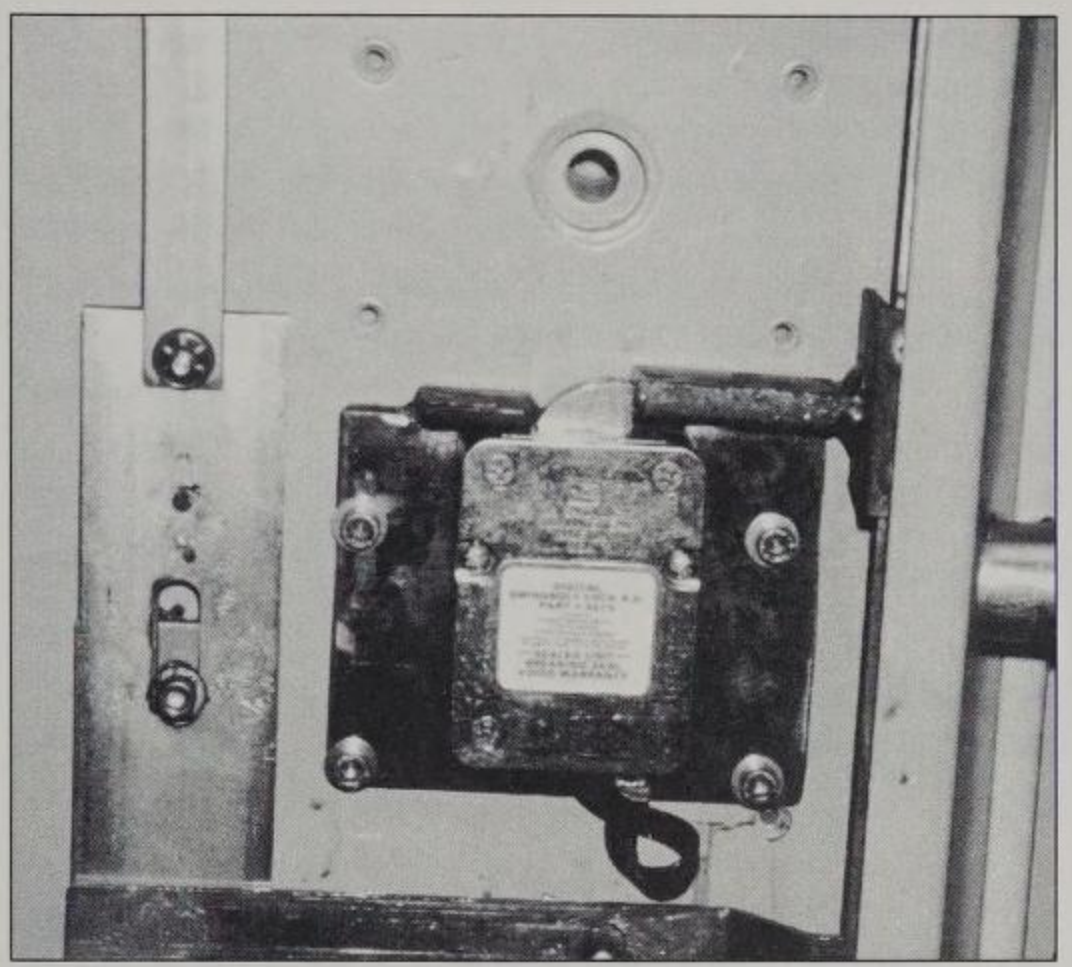
Next, Dave had to select a lock. He chose a LaGard 3600 and bolted it on. So far, so good. All that remained was to attach a tailpiece to the main boltbar. Without this tailpiece, the 3600 would block nothing. Finally, with freshly-made tailpiece and the new lock in place, Dave was done. We see the finished product in photograph five. This model Arden, has four locking bolts on the opening side, and one bolt each top and bottom. The relocker at the bottom of the photo is live, not dead, active, not passive. Every time the keylock is locked, the relocker shoots out and blocks the bottom locking bolt from retracting. Each time the keylock is unlocked, it retracts the relocker, allowing the boltwork to be unlocked.



4. A Fichet Arden with malfunctioning C2C lock.



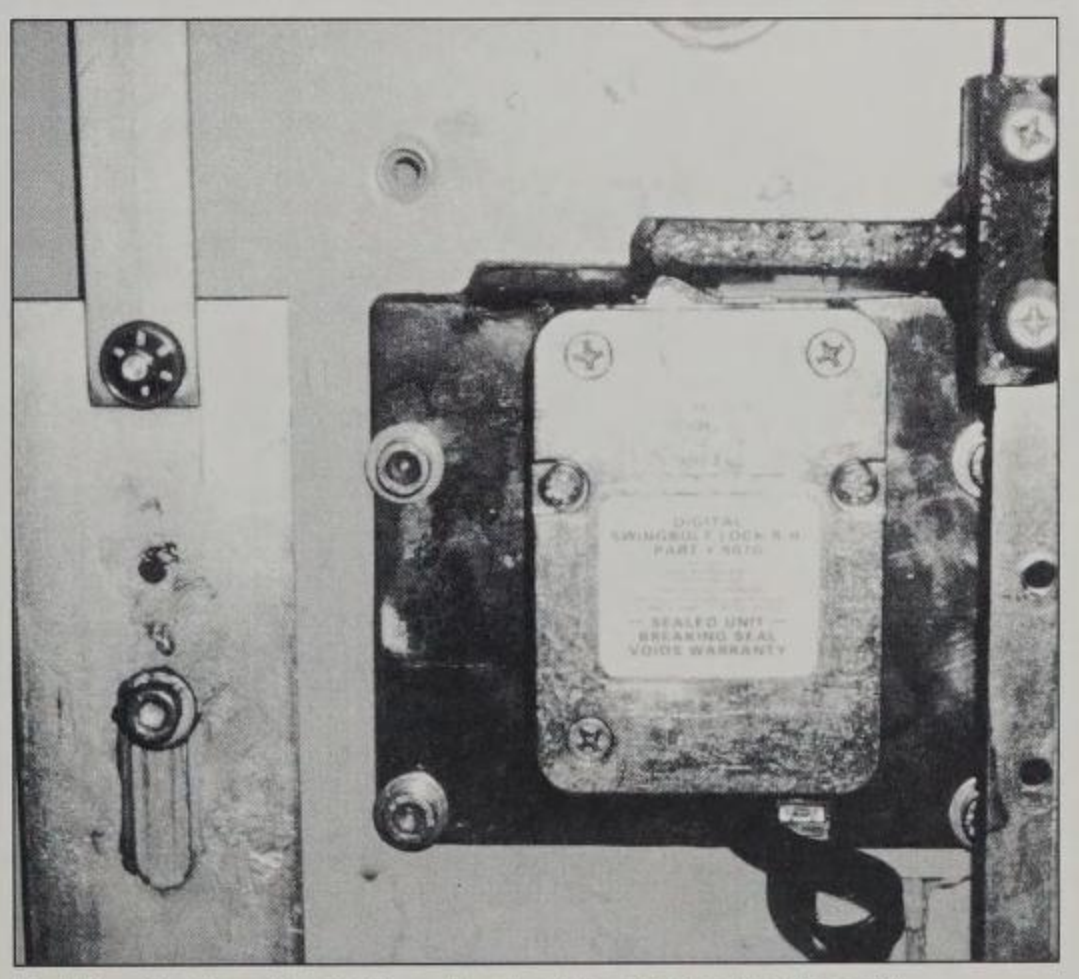
5. A retrofitted LaGard 3600 swingbolt lock on the Fichet.



6. Close-up of a freshly-made tailpiece

In photograph six, we move in for a close-up of Dave's handiwork. The boltwork is in the extended position and the 3600 is locked.

In photograph seven, we have unlocked the lock and



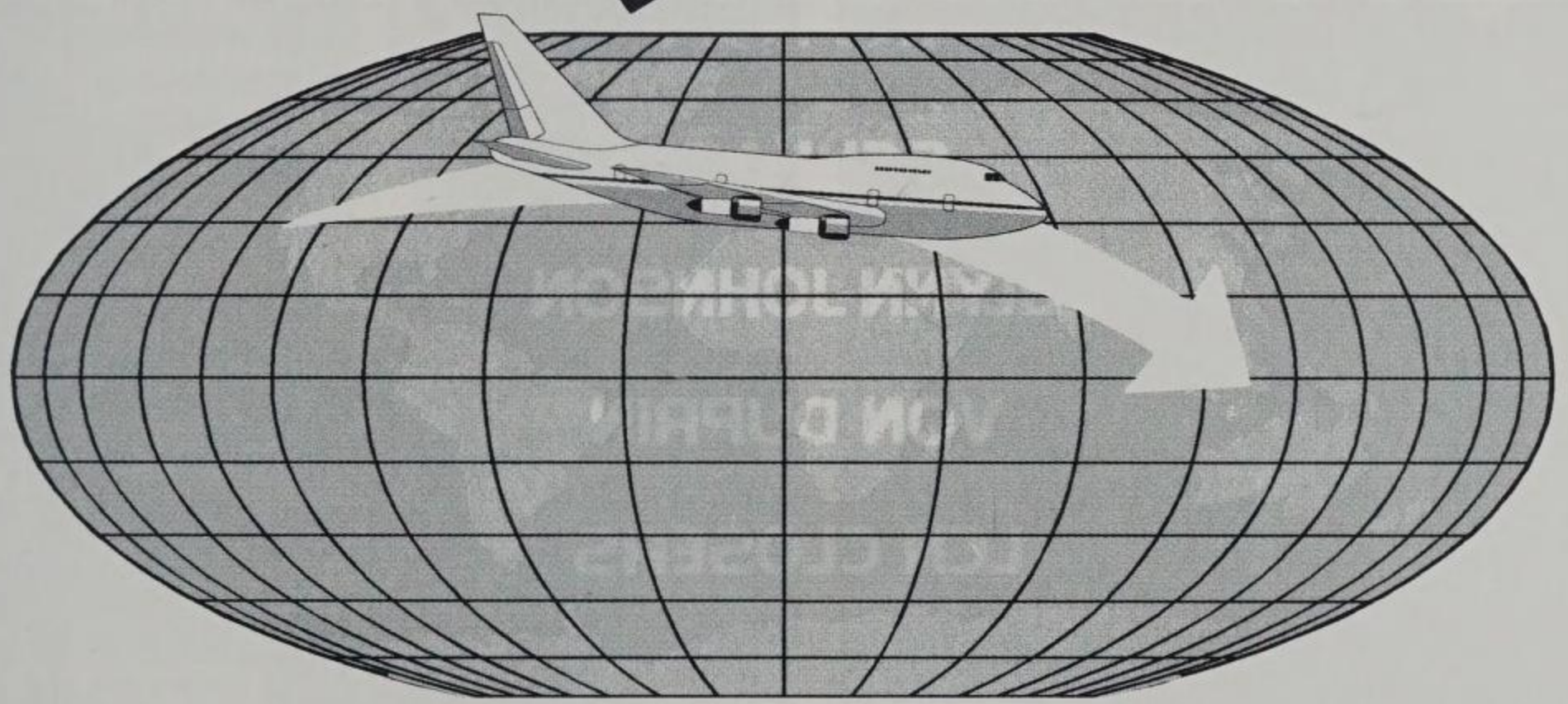
7. The LaGard 3600 unlocked and the boltwork retracted.

retracted the boltwork. This is a textbook example of a properly done retrofit. Well done, Dave.

See y'all next month. TNL

by
Dave McOmie

Opening a Vector for the Record Books



In the earthquaked ruins of Guam, a lone Vector awaits the arrival of the Lone Ranger from the states.

Who holds the record for the longest safecracking service call? Jeez, I used to think I was hot stuff zig-zagging across the United States. But Todd Kerrn and Skip Eckert have both bested me, and by huge margins. As some of you will remember, right after Desert Storm, Skip stuck his head into the mouth of the lion. Yup, he accepted a job that several other American safecrackers turned down, and hopped a plane over to Saudi Arabia to open an SMP Wessex for an ultra-rich prince.

Would I have gone? For the number of dollars Skip charged — and more importantly, *received* — heavens *yes* I would have gone. But they never called me. Boo hoo! By the way, the next time you see Skip, ask how the harem treated him while he waited for the prince. It's a great story. (But is it true? Only Skip knows for sure.)

A few months back, Todd Kerrn of Professional Safecracking in Orange County, California, went just about as far as Skip. He hopped on a Boeing Behemoth and sat in the middle seat (poor Todd) for umpteen hours on the very long flight from LAX airport to Guam. Yessir, Todd was on the front leg of a 12,000 mile round trip service call.

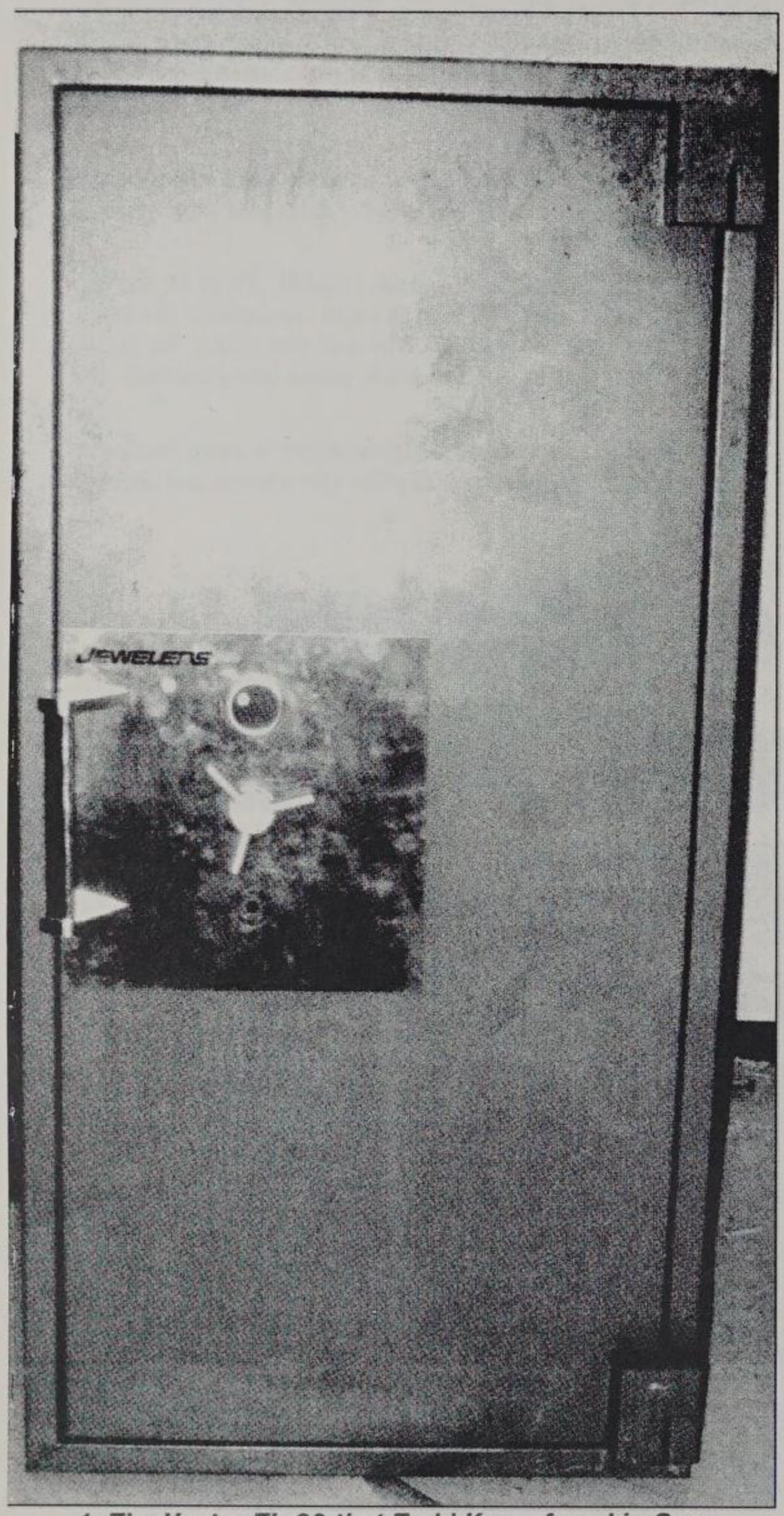
There had been a rather severe earthquake on Guam. When the owner of the Vector TL-30 *(See photograph 1)* opened his place of business the following day, his keylock would not cooperate. So he forced the key and broke it off. Duh. Then he tried to get it out. When that didn't work, he called all the locksmiths on Guam, one of whom tried to drill out the key. After all the locksmiths shrugged their shoulders and walked away, the safe owner called the states and was put in touch with Todd.

After a night's rest, Todd went to work. He took one look in the keyhole, decided it was a lost cause, and punched the keylock.

The keylock gave Todd some trouble. First of all, the back panel on a Vector TL-30 is right up against the back cover of the lock, so when Todd was punching, he could hear that tinny sound of the back panel being rattled. Oh boy.

Todd had to use a small sledgehammer to coax that back panel to bow out just enough to allow the wheels and spacers and the back cover of the lock to fall inside the safe. But then he discovered that the back panel was too close to the lock to fully insert his relock-defeat tool. (In an upcoming issue of *The National Safeman* we will be doing an in-depth article on the key-punching technique for opening the LaGard 2200 keylock, including a great trick for overcoming this problem.)

Todd went around to the opening side of the safe and drilled a hole, aiming for the lockbolt of the keylock. As he was sliding his scope into the hole for a look at the keylock, he noticed that the lower external relocker nearest him had fired. Oh great, another problem to contend with. Well, it would give him a chance to check Ed Willis's drawing for accuracy.

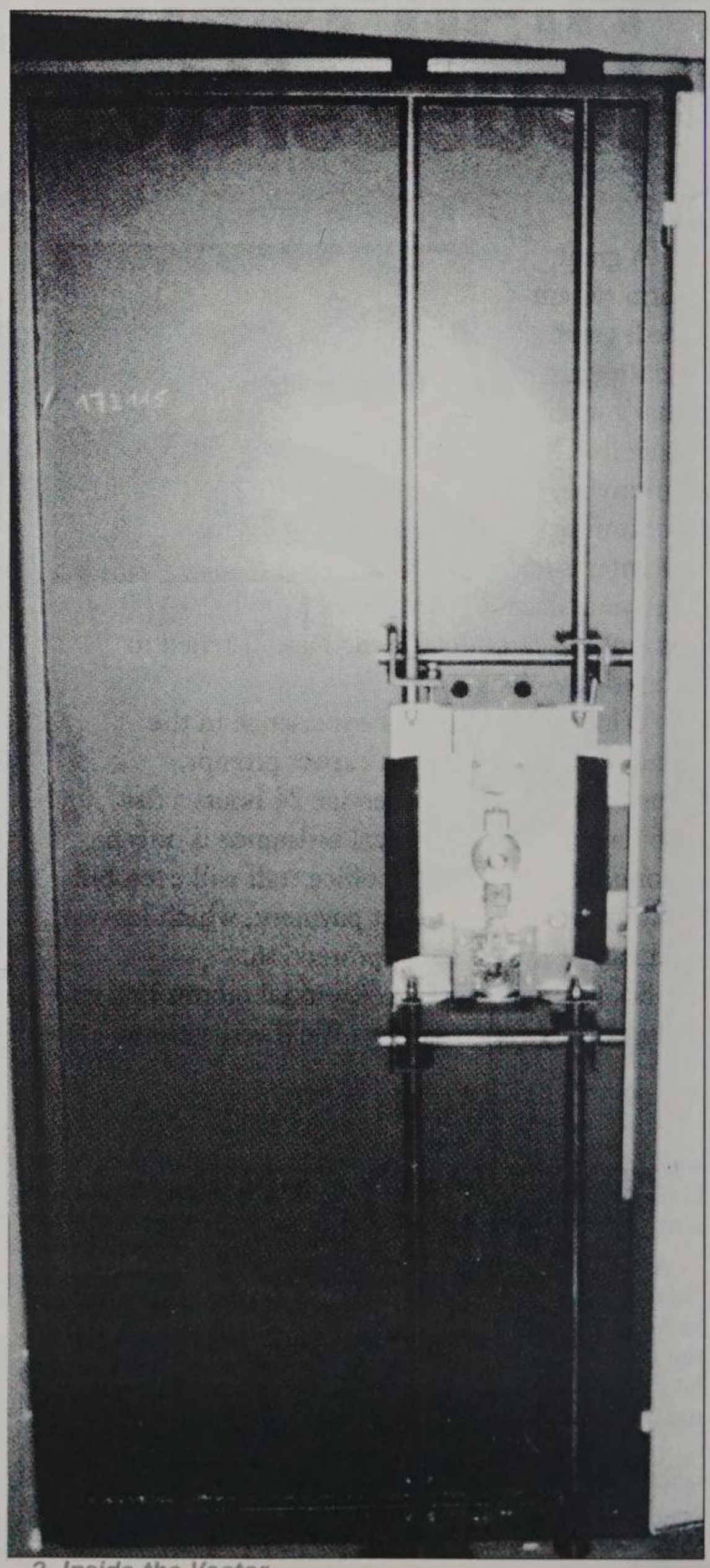


1. The Vector TL-30 that Todd Kerrn faced in Guam.

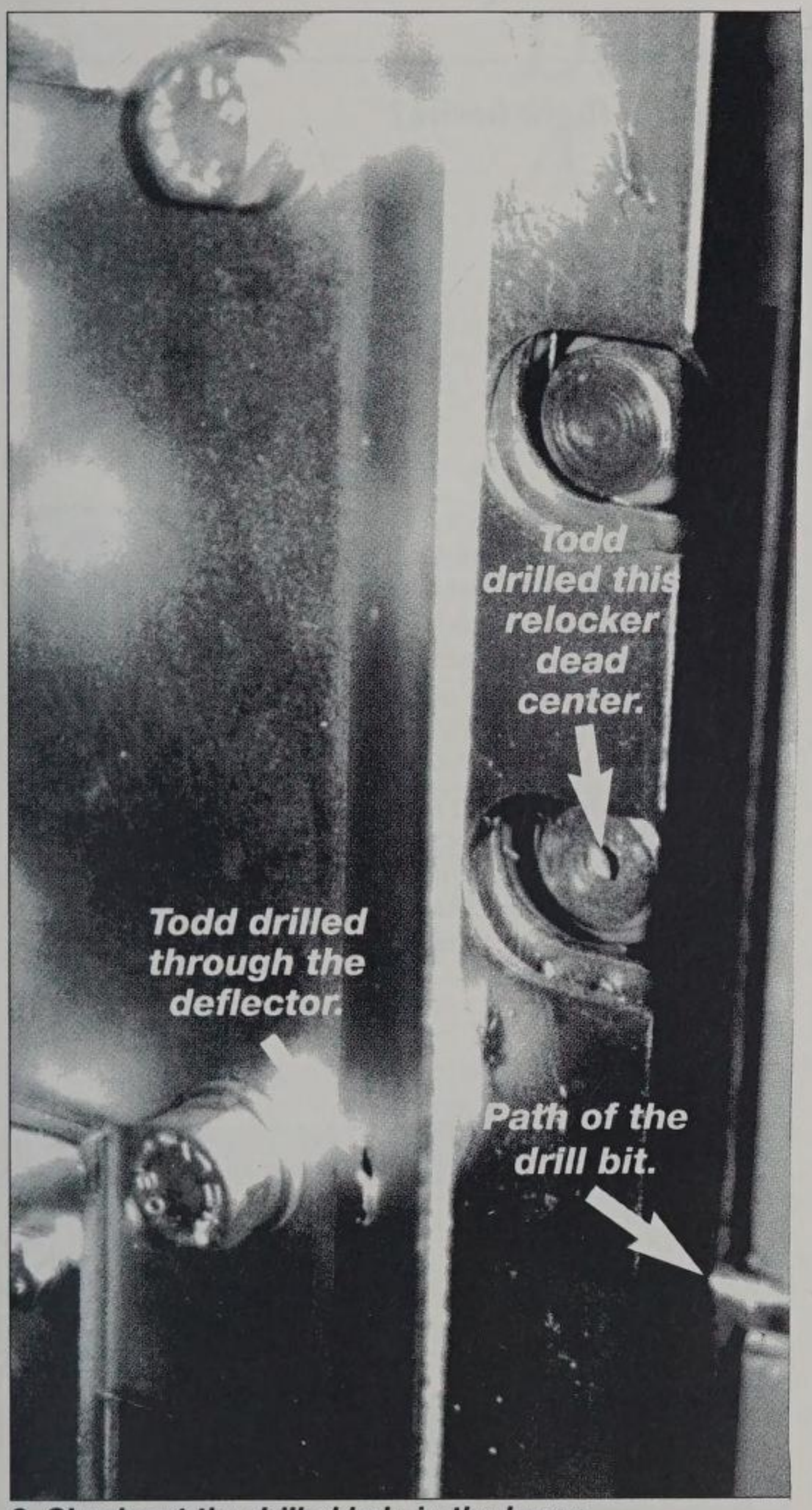
Like any seasoned professional safecracker, Todd stays focused and attacks one problem at a time. First, he needed to unlock the keylock, so without bothering himself with the internal relocker, he simply pried down on the lockbolt. Todd was surprised when he was easily able to pry the lockbolt down far enough to allow the handle to be pulled out, which is the first step in retracting the boltwork. Only after the handle is pulled out a little can it then be rotated to retract the locking bolts.

But of course Todd's handle would not rotate because he had at least one fired relocker. So out came the Ed Willis drawing. Todd took his measurement for the relocker that he *knew* had fired, and center-punched himself a nice little crater 4-5/16" right of handle center, 1-3/8" down from handle center. Like me, Todd prefers craters over dimples for center-punch marks.

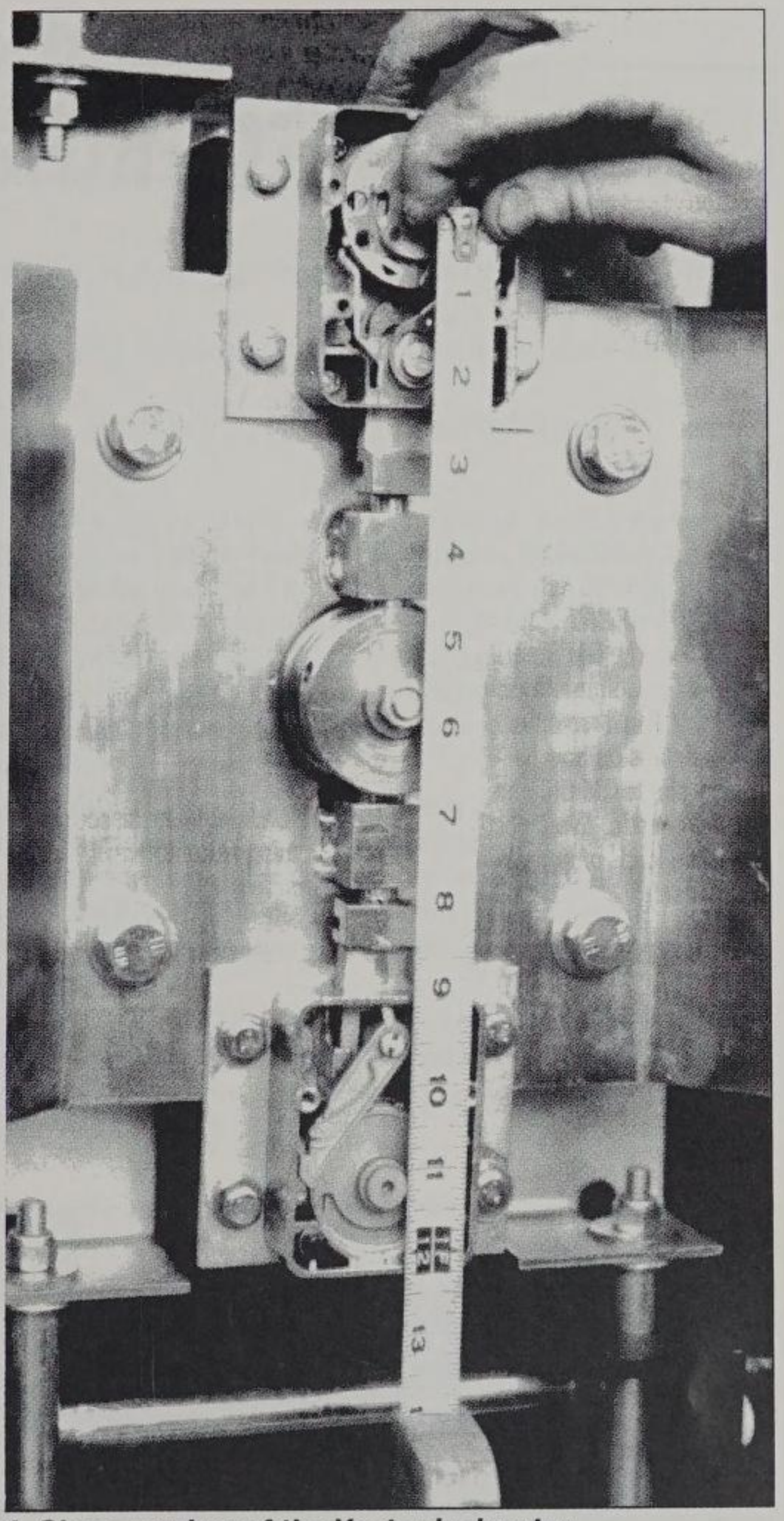
Up on the safe went Todd's Milwaukee magnetic drill press. He knew it wouldn't stick to the thin skin, so he wrapped a cargo strap around the safe and around the drill press to hold it in place. Todd wanted to ensure a *straight* hole and sure enough, Ed Willis was right on the money. Todd pierced the exact middle of the relocker, hooked it and pulled it back. To his surprise, the handle rotated — the safe was open. Only one relocker had fired. More about that in a moment.



2. Inside the Vector.



3. Check out the drilled hole in the lower relocking pin.



4. Close-up view of the Vector lock setup.

Photograph 2, shows the inside of the Vector. This is a 3-way boltwork, with active locking bolts on the opening side, top and bottom.

Photograph 3, is one that Todd Kerrn and Ed Willis can both be proud of. Todd for drilling straight as an arrow and Ed for being painstakingly precise. Look at the hole in the lower relocking pin, it almost looks factory it was so perfectly placed. What would we do without Ed's fabulous drawings? Answer: we would be drilling more holes than necessary. Look closely and you can see that Todd's side shot actually went right through the deflector. No problemo says Toddo — it is mild steel.

When Todd stripped the door down, he found out why only one relocker fired. There are two cables attached to the glass plate. One cable controls the two relockers on the hinge side, the other controls the two relockers on the opening side. Well, the glass was not broken. But the earthquake had been strong enough to cause one loop of one of the cables to jump off its routing post. This resulted in enough slack for the two opening side relockers to fire. Luckily for Todd, the upper relocker temporarily jammed, and did not actually fire until Todd had the door open. Luckeeeeeeeee!

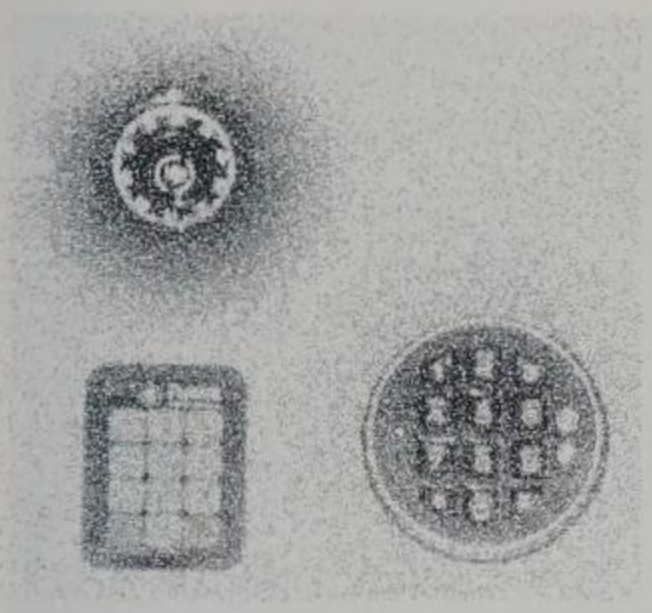
The way Todd looks at it, that lucky break made up for having to sit in the middle seat on the flight over. But what is going to make up for the flight back? We'll keep you posted.

Photograph 4, is a nice view of the Vector lock and deflector plate setup courtesy of the McOmie files.

Attention Southern Californians: if you are south of Los Angeles and north of San Diego, and need a first-rate sub-contracting safecracker, call Todd Kerrn at Professional Safecracking. His number is (619) 940-1019. Well done, Todd. The Guiness people may be calling about the ultra-long-distance service call, so put on your best phone voice.

TNL

Way to go, Todd. Hey, how was the flight home?



Dave Richardson: A Case Study In Retrofits

Its not as exciting as drilling, not as glamorous as manipulation and there is no rush of adrenaline flowing through the veins when the door swings open. There is however, a lot of money to be made in retrofitting.

by
Dave McOmie

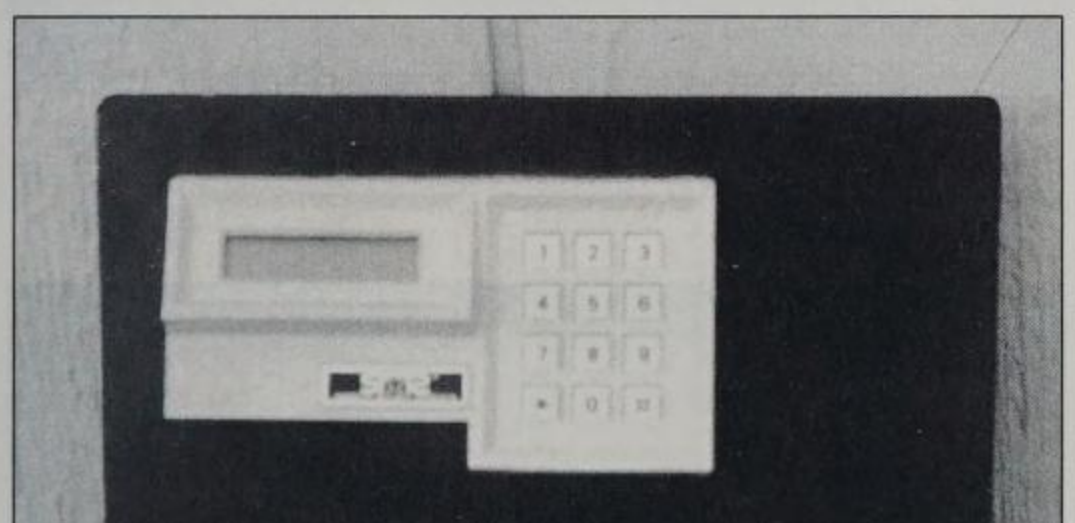
I take up most of the space allotted me in The National Locksmith, with the sexy stuff—how I vanquished this here TRTL-200x6, how I drilled a 1/64" hole and defeated that there vault door, etc. In other words, I usually write about safecracking, safecracking and more safecracking.

Well, this month we are going to change gears and take a look at an overlooked but profitable aspect of safe work: Retrofits. What do you do when a customer brings in a safe that is DOA? Do you turn them away (like I usually do), or do you try to fix 'em up?

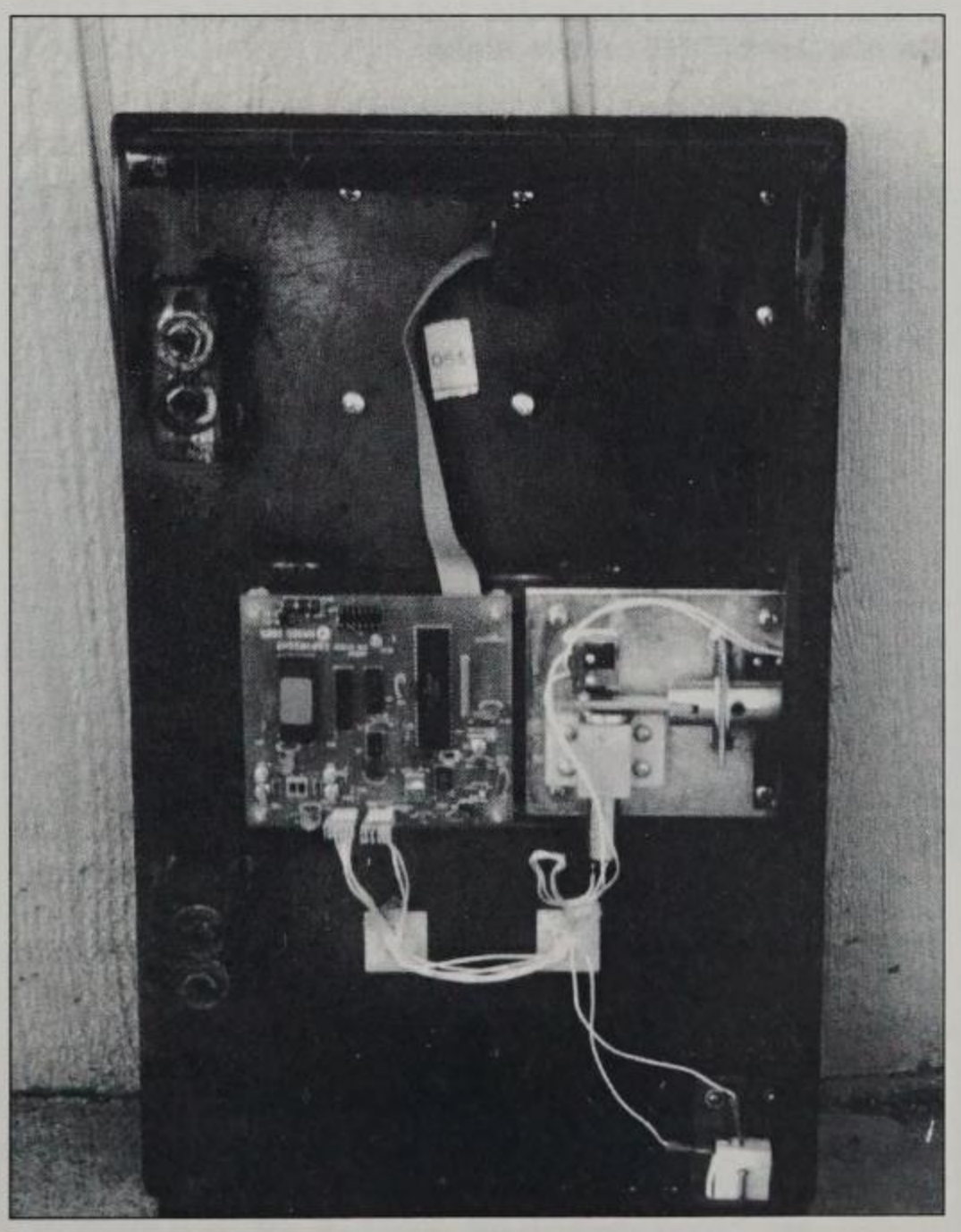
Dave Richardson, chief cook and bottle washer of Richardson Safe & Vault in Los Angeles, fixes them up. Lots of them. No one that I know of does more retrofits than Dave Richardson. And no one that I know of is as qualified as Dave to do retrofits. A former magician, repo man and bounty hunter, Dave is now a first-rate safecracker, a certified welder, a part-time fabricator, and in general, a very clever guy.

In the following photo story, we will look at four of Dave's recent retrofits, two on electronic safes that died, one on an antique cast iron fire safe, and one on a round door. There is plenty of food for thought here, and plenty of safes out there waiting for you to make a buck on. Don't replace when you can retrofit!

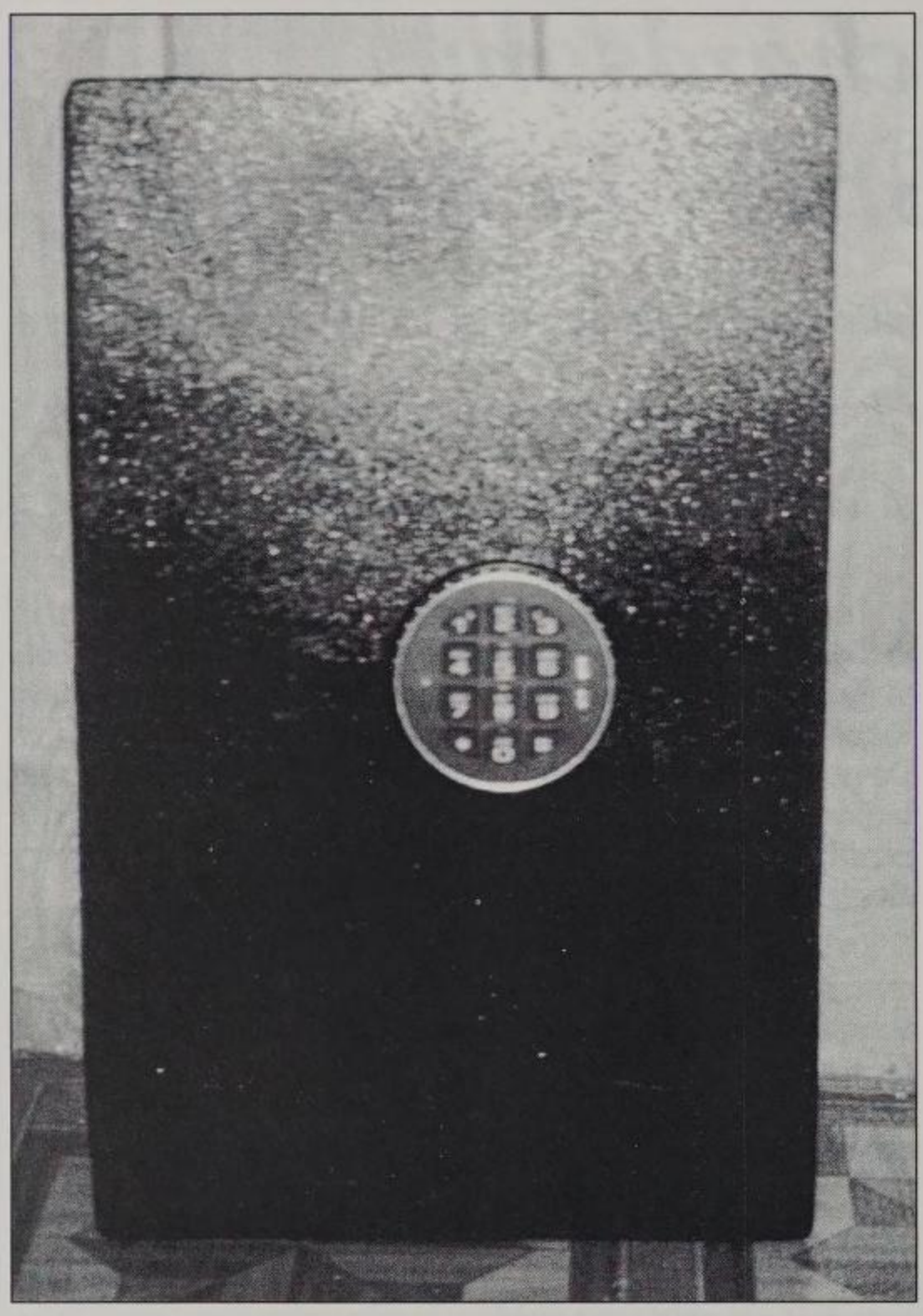
If you are a locksmith in the greater Los Angeles area in need of a subcontracting safecracker that does first-rate work, contact: Dave Richardson The Fabricator, Richardson Safe & Vault, (805) 251-2366.



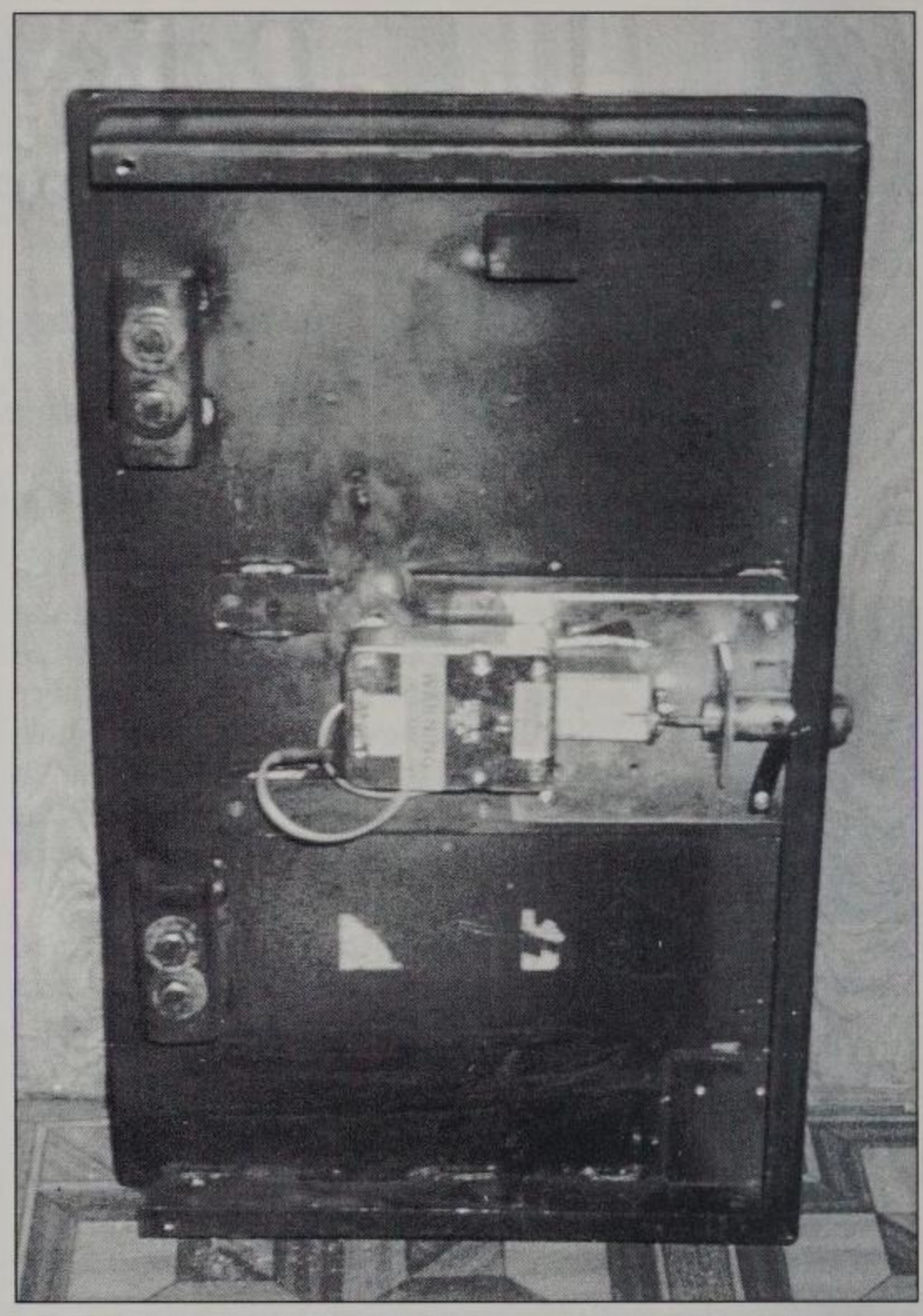
1. This Amsec/Star electronic safe was opened and repaired a number of times. The customer finally said "no mas" and wanted a retrofit. Ultimately he found the right man for the job—Dave "The Fabricator" Richardson.



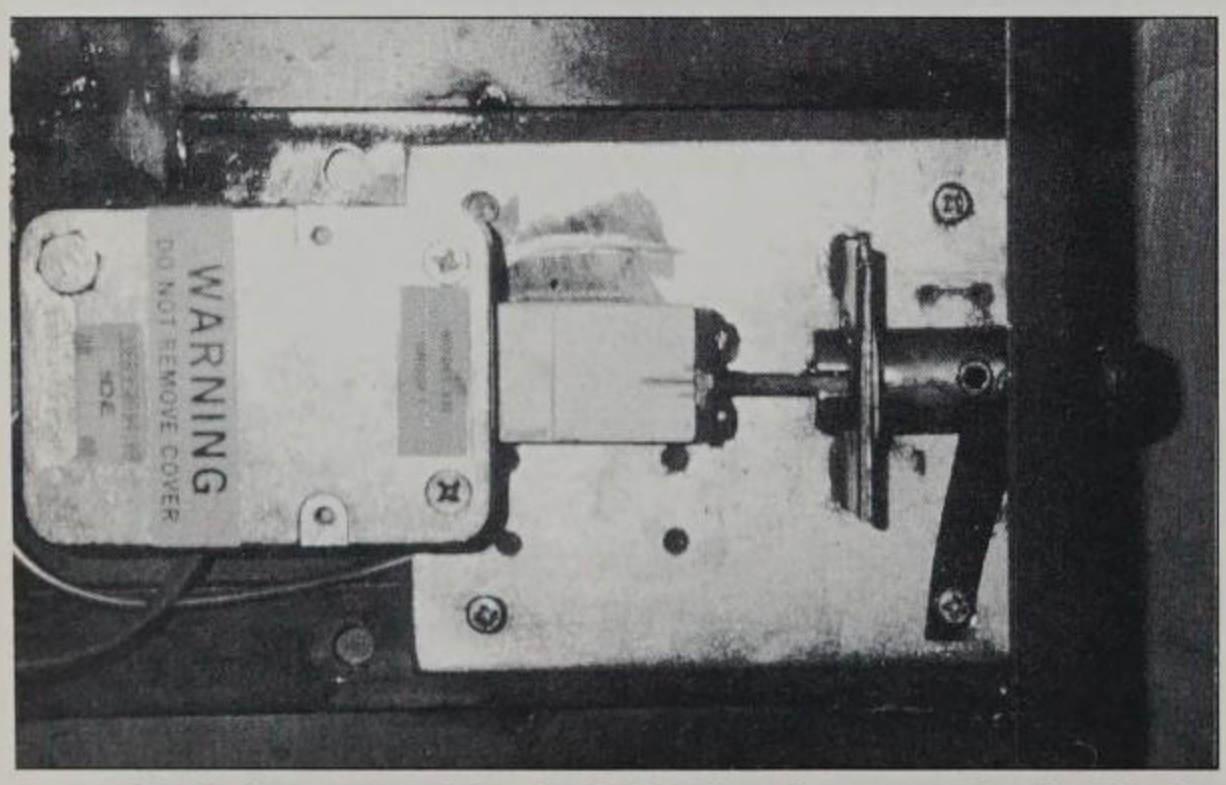
2. Inside the Amsec/Star, prior to conversion.



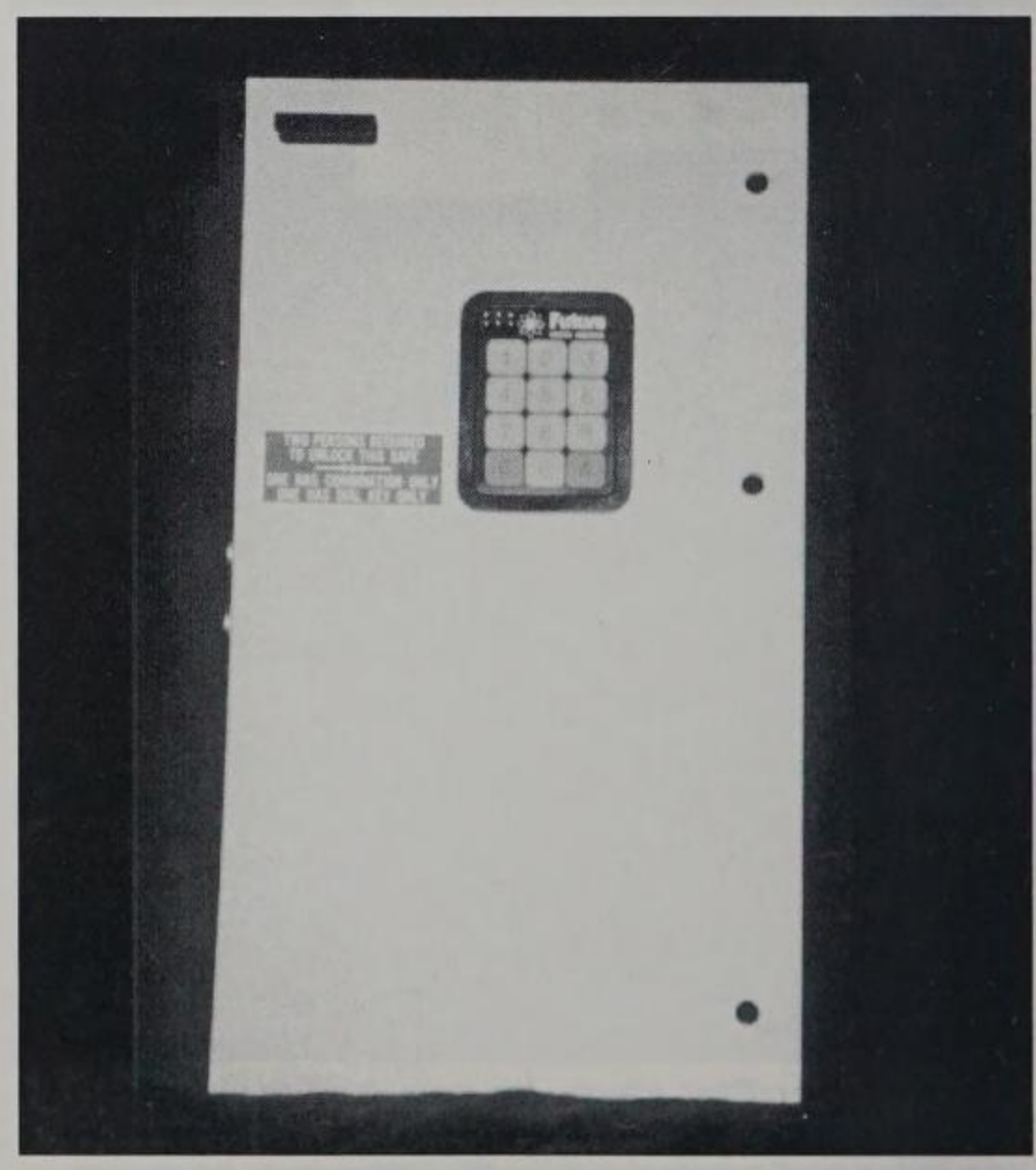
3. The LaGard keypad on the outside tells us that a LaGard electronic lock was used in the retrofit. The extra-thin keypad indicates the presence of a ComboGard (33E) on the inside.



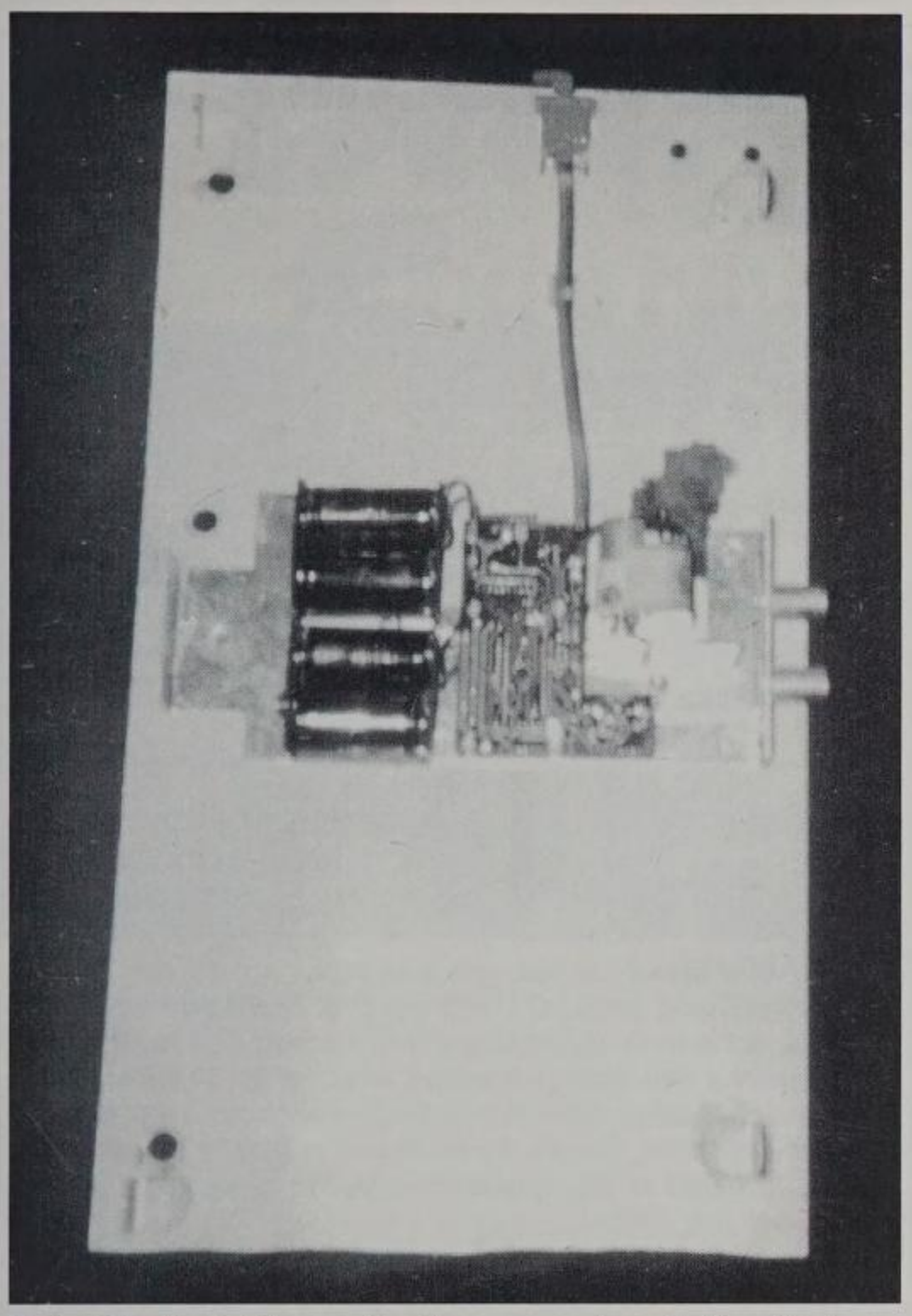
4. Dave removed the electronics and modified the locking bolt to connect it to the extended lockbolt of the ComboGard.



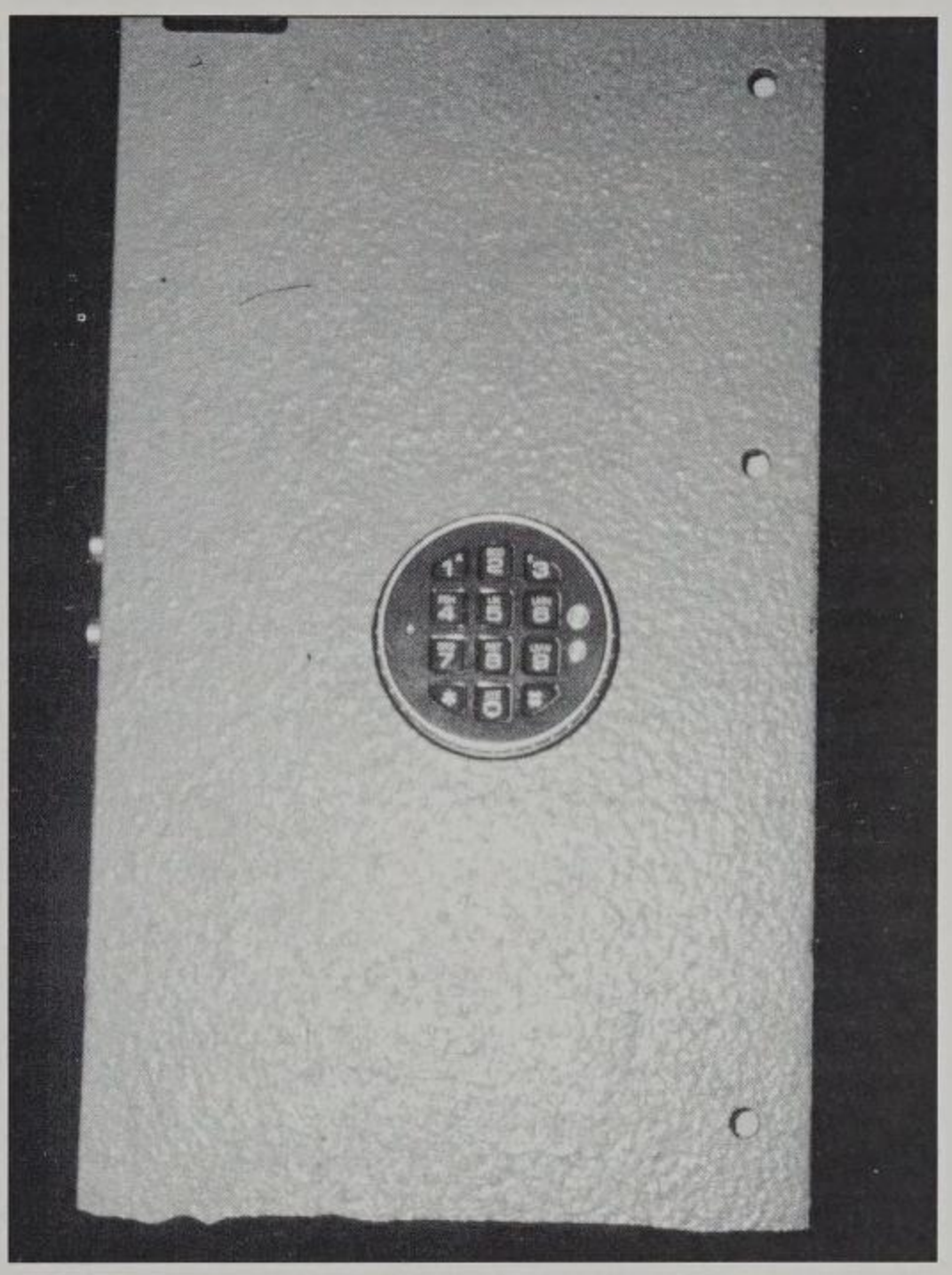
5. A close-up of the lock. Notice the extended lockbolt attached directly to the locking bolt. Under most circumstances, it is a no-no to use a direct lockbolt-to-locking-bolt kind of connection. This is due to the high risk of end pressure binding the lever, but this lock has no lever, and retraction is accomplished by rotating the keypad of the ComboGard 33E. Well done, Dave.



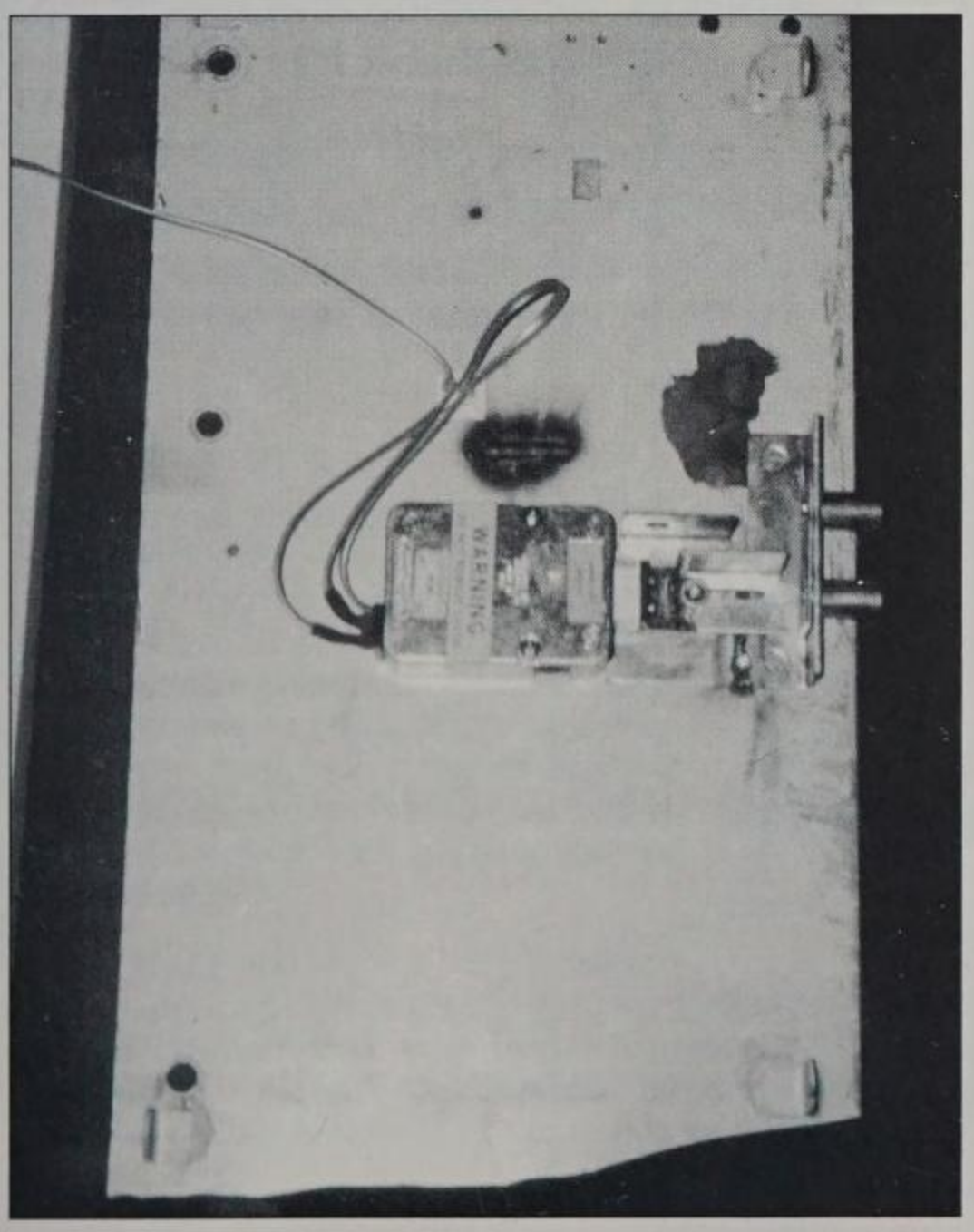
6. This is a Fichet Futura. The safe comes in several different sizes, but the basic boltwork arrangement is the same in all the ones I have seen.



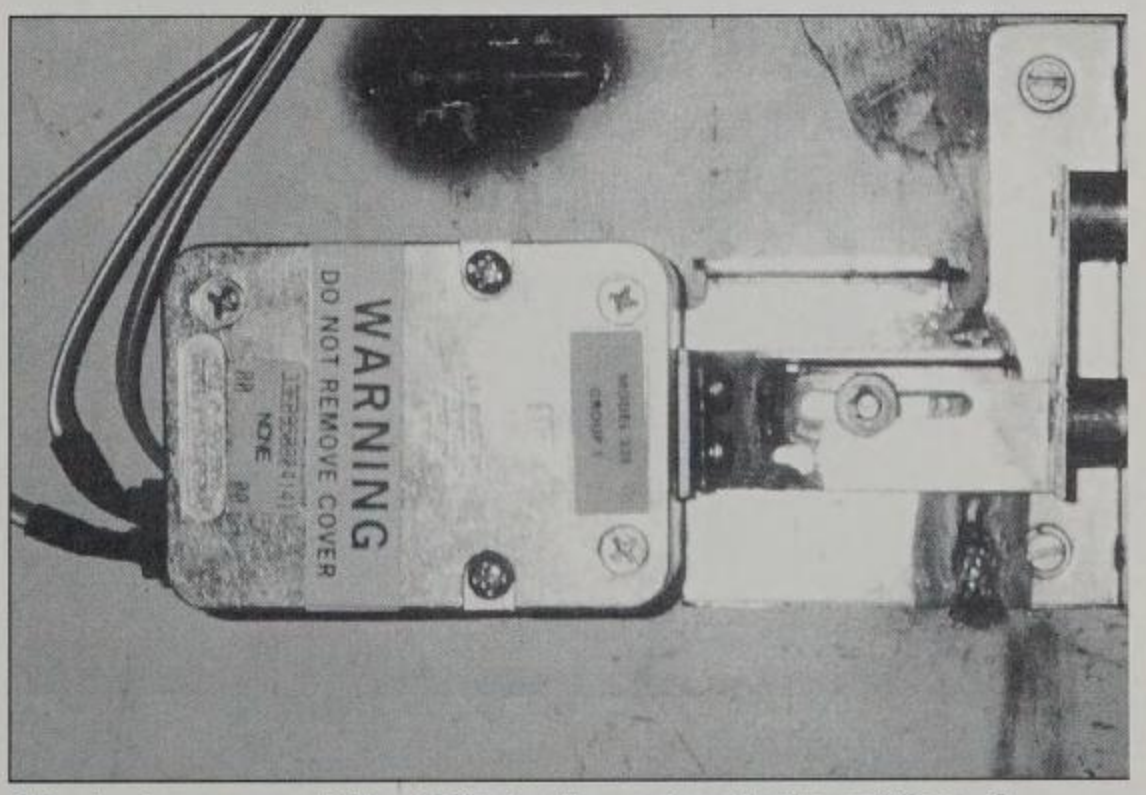
7. Inside the Futura prior to conversion. Notice that the Futura has two locking bolts on the opening side of the door.



8. After the retrofit we see nothing but a LaGard keypad. The lock is a ComboGard (33E). To open this lock you enter the combination on the keypad and then rotate the whole keypad almost 90° clockwise to retract the lockbolt (and whatever is attached to the lockbolt).

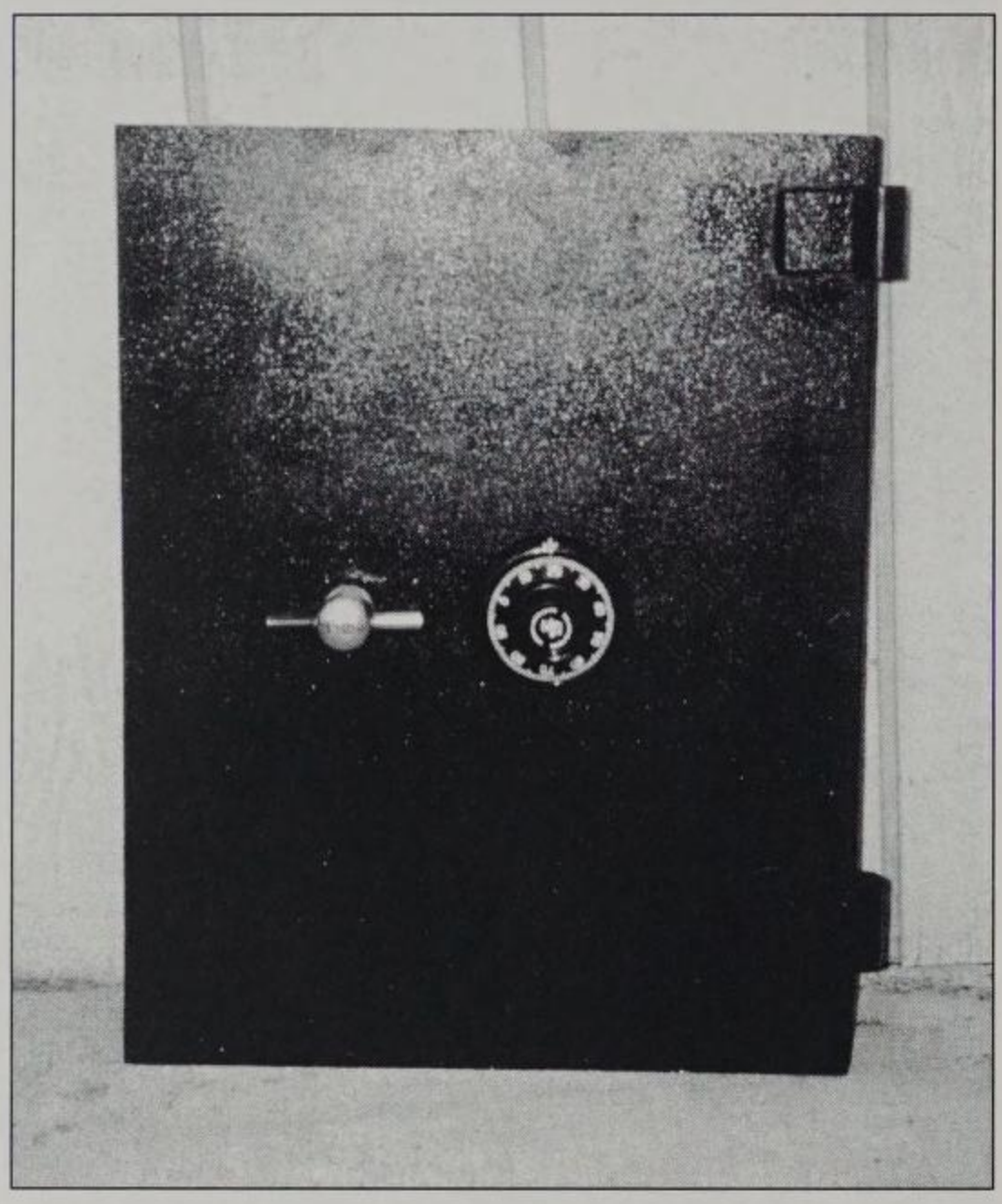


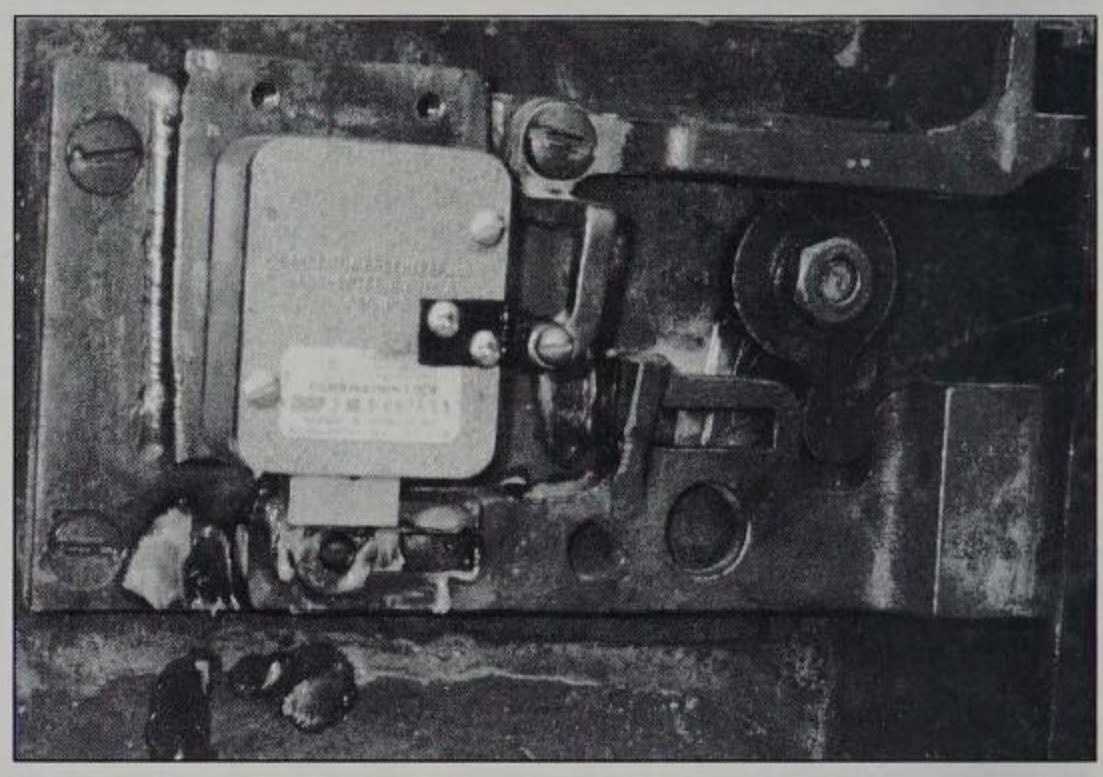
9. Inside the Futura after being retrofitted with the 33E. Once again, Dave used a direct connection between locking bolts and the lockbolt. No problemo for The Fabricator.



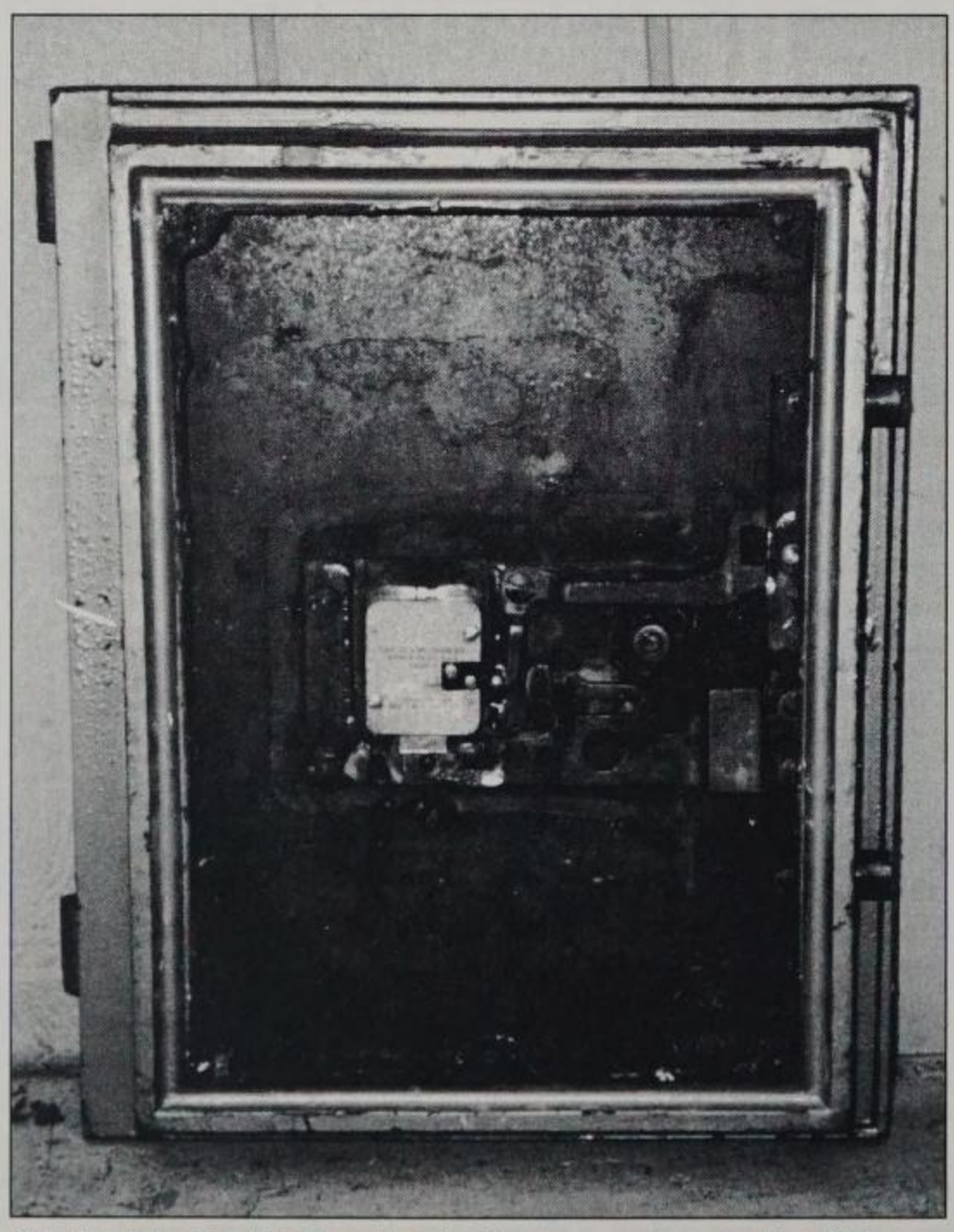
10. A close-up of the 33E in the retracted position. A very nice retrofit. Clean, simple, functional, and profitable—ask Dave!

11. Doing a retrofit on a Halls cast iron fire safe is a pain in the buns, because you have to chop out all the old fire insulation to expose the boltwork. But Dave doesn't even blink. He just gets in there and does it. And he doesn't eat quiche. What a Prince Albert of a man! Wait until you see this beautiful retrofit. The first hint that something is different about this Halls safe is the presence of a zamac Sargent & Greenleaf dial.





13. In this close-up we can see what a nice job Dave did retrofitting an S&G 6709 on this Halls safe. He fabricated a new mounting plate to bolt the lock to, and welded the new mounting plate onto the bedplate of the door. Dave even took the time to make a detent for the relocker. I have seen many retrofits on Halls safes, but this is the cleanest most professional yet. Fantastic job, Dave. TNL



12. Inside the Halls, about all we can see is the VD-mounted lock and the two locking bolts. Let's zoom in for a close-up.

So "The Beast" has a predilection for restoration, retrofitting and repair? Who'da thunk it?

Sentry Saves The Day

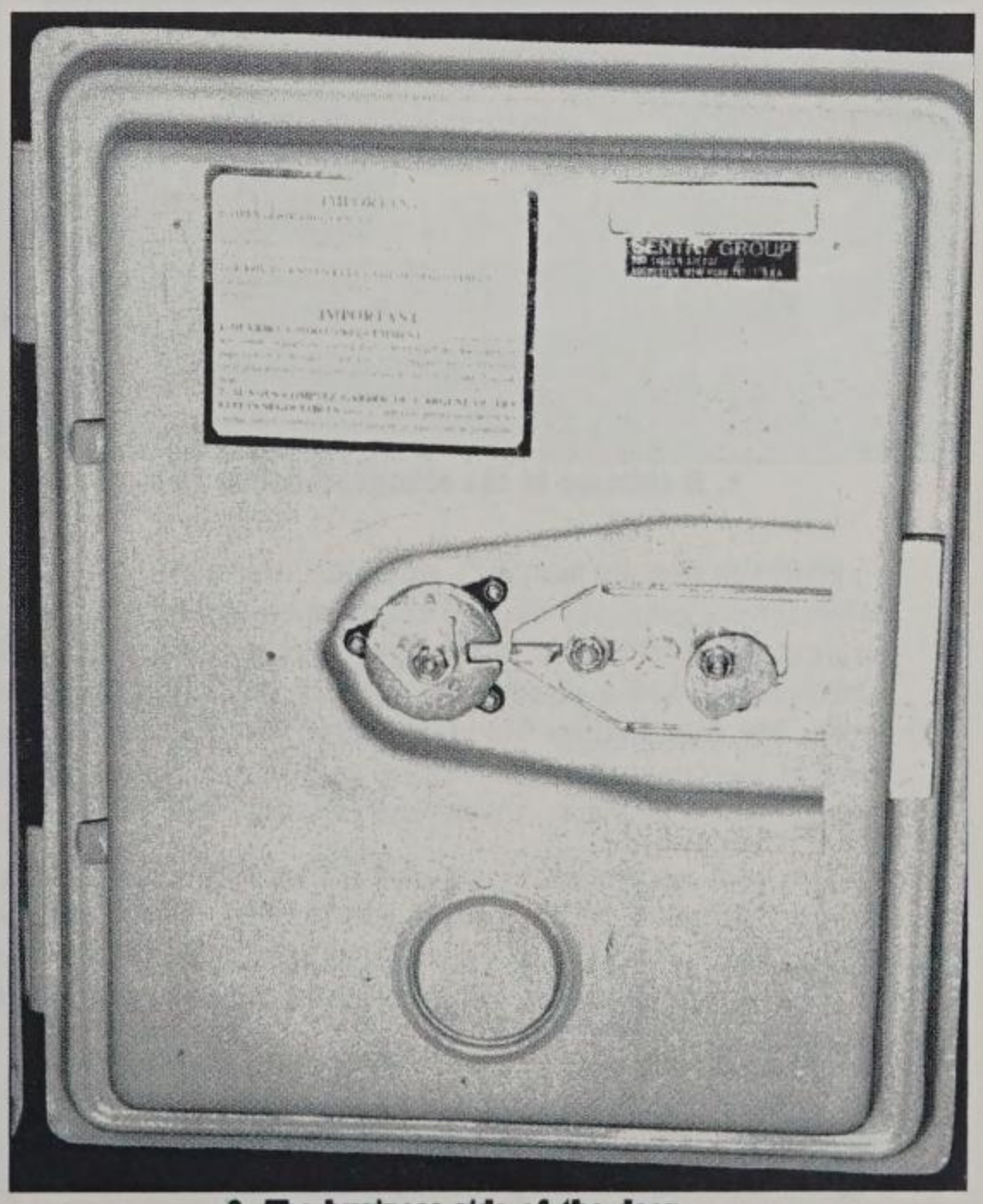
Sentry safes are among the easiest for (legal) professionals to crack, but Sentry safes do the job for which they were designed.

by Dave McOmie

At one time or another, every locksmith and safecracker in the country has poked fun at Sentry safes. Why? Because Sentry safes are among the easiest for (legal) professionals to crack. For years they didn't use hardplate, not even in their round door money safes. And their straight-tailpiece lock is fairly easy to manipulate.

On many occasions I have defended Sentry, arguing that in their price range, Sentry safes can more than hold their own in the free market. And the numbers bear me out. What domestic safe manufacturer can boast of selling hundreds of thousands of safes per year? Only Sentry.

1. A Sentry 6330.



2. The business side of the door.

And, Sentry safes do the job for which they were designed. As you will see in the accompanying photographs, they are indeed fire resistive.

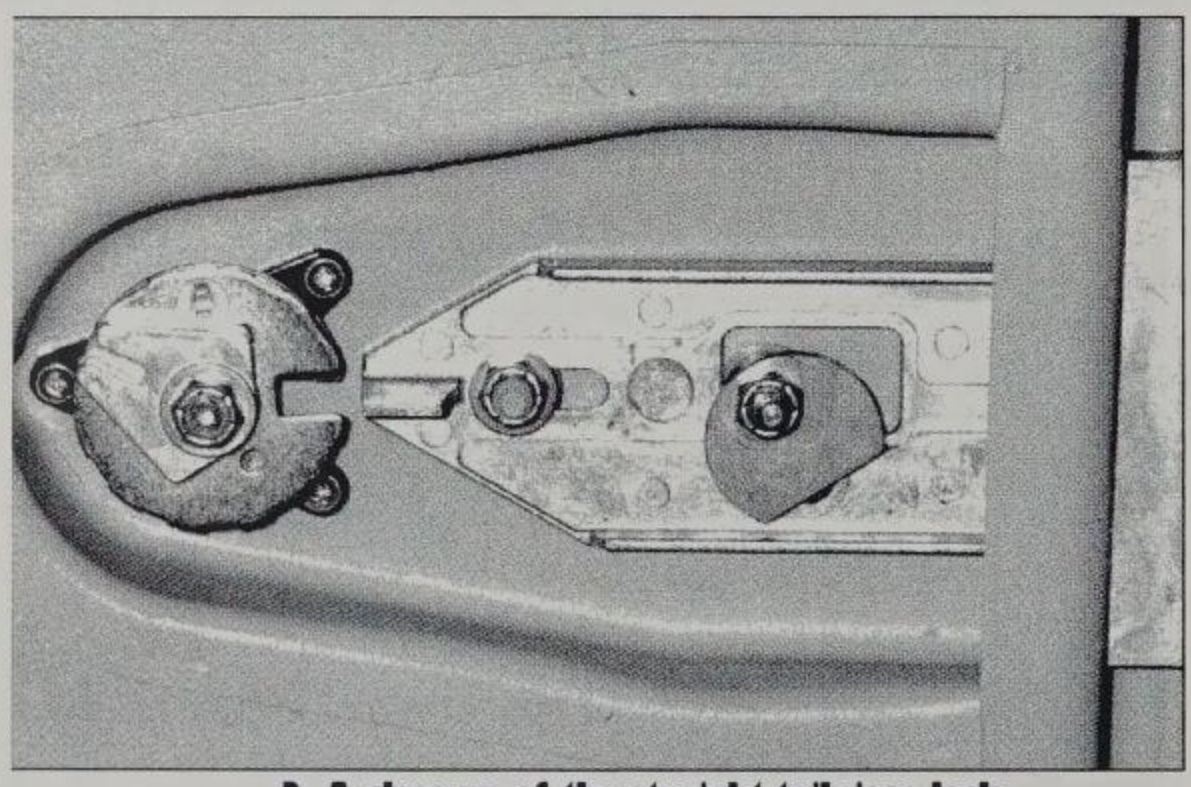
But before we look at a toasted Sentry, let's look at the untoasted, pristine specimen shown in *Photographs 1-3*. This is a model 6330, fairly representative of decades of Sentry safes using a straight-tailpiece lock. There have been minor changes over the years, but the basic design has remain unchanged.

In *Photograph 4*, we see what is left after a scorching fire that leveled most of a house. Can you spot the safe amid the soot, ashes and debris?

Photograph five is a close-up of the safe. The dial, handle and escutcheon have melted away, necessitating the services of a locksmith/safecracker to open the burn victim for a very nervous owner.

In *Photograph 6*, the owner grins from ear to ear as he retrieves his documents, all of which came through the fire unscathed.

Photograph 7, is amazing—even his computer tapes came through in fine condition. That was an unexpected but welcome surprise.



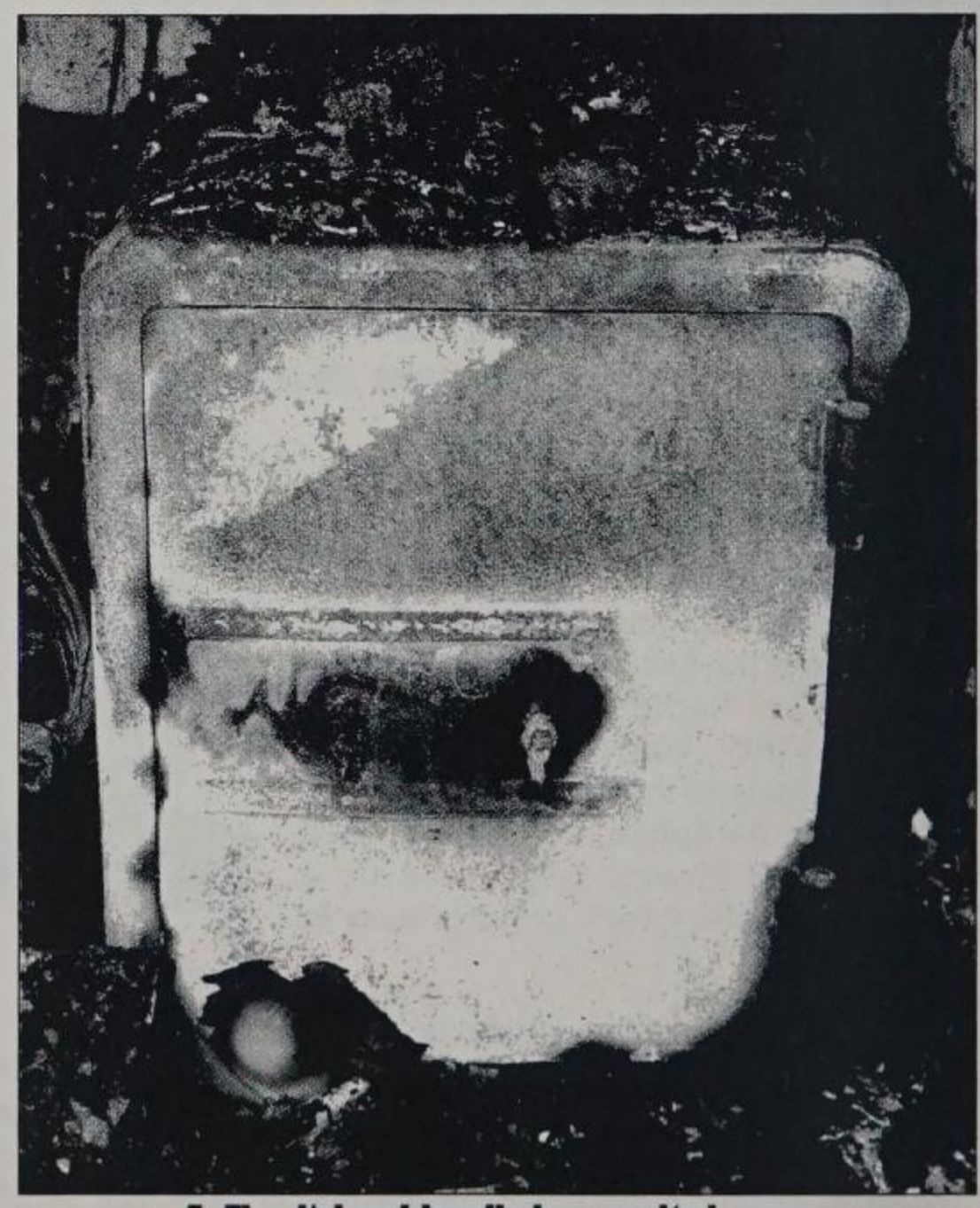
3. A close-up of the straight-tailpiece lock.

With the fire put out, let's turn our attention to the stuff safecrackers get really excited about: opening techniques for straight-tailpiece Sentry safes. Take a look at *Photograph 8*, and you will see a manipulation aid for straight-tailpiece locks. My friend Mike Madden made this tool, and he has used it successfully on straight-tailpiece locks on safes manufactured by Halls, Alpine, and Herring-Hall-Marvin.

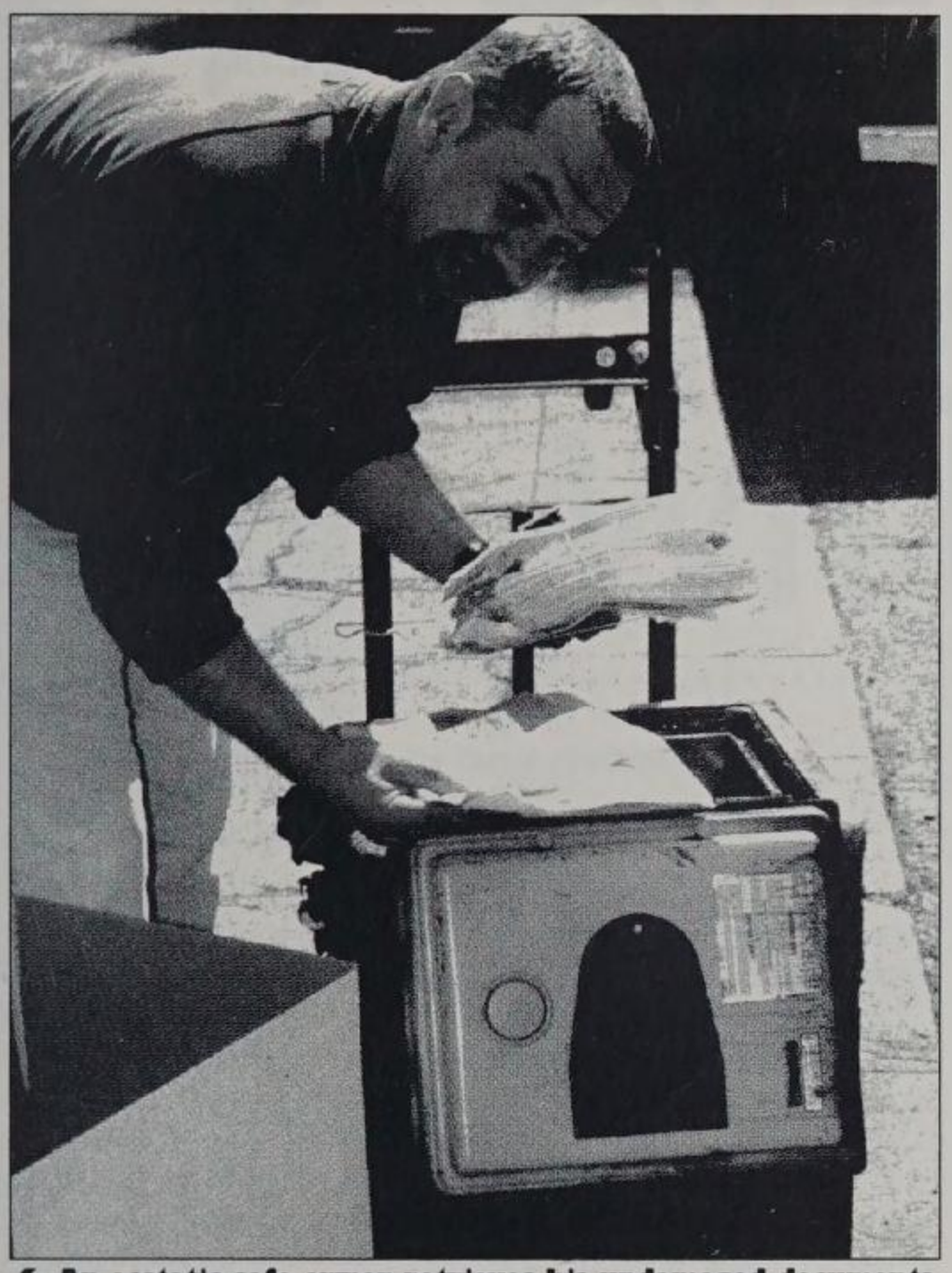
The tool comprises six basic parts: two brass tubes, pointer, magnetic ruler, spring and magnet. The tubes go around the handle T's; in the safe pictured, the left tube has the pointer attached to it, while the right tube has the spring and magnet attached to it.

Using the tool is simple: you first must find the driver gate. Then you can rotate the wheels, return to drop in and check the position of the pointer. As the wheel gates come around, the tip of the pointer will progress further and further down the ruler. The indications will vary from lock to lock. Mike has had Halls locks indicate as little

4. After the fire. Where is the safe?



5. The dial and handle have melted away.



6. An ecstatic safe owner retrieves his undamaged documents from the Sentry safe that did its job.

7. Even the computer tapes lived through the fire. And this, needless to say, is not a data safe.

as 1/32" on a wheel gate, while Alpines have indicated as much as 3/8" on a wheel gate.

Yes, you can use this tool on Sentry safes. I remember one time when I worked for a large safe company. We received something like 250 or so Sentry safes after a wholesale purchase of damaged cargo. The safes were all locked up. We had a blast manipulating Sentry safes for days on end. We didn't use a nice pretty tool like Mike's; we just duct-taped pointers onto the handles, and drew indicator lines on masking tape. But it worked.

Having said all that about manipulating straight tailpiece locks, I am now going to do a 180. When in comes to Sentry straight tailpiece locks, forget manipulation. Save it for use on Halls or Alpine safes. There is a faster and better way to approach Sentry safes.

What is it? The unmanly, quiche-eating process of elimination. Yup, you read it right—*the Process of Elimination*! Before you groan, let me say that I groaned when I first heard of using the P of E on Sentry. Come on, I thought, that is like a locksmith using try-out keys. That's *cheating*!

Well, it ain't cheating. When it comes to opening Sentry safes, the P of E is faster, better and much easier than manipulation. No doubt about it. Following are instructions for applying P of E to Sentry.

The Process of Elimination

Find the driver gate by going around the dial every five numbers, trying the handle each time. You'll know when you are on the driver gate (and not a false gate) because the handle will rotate farther; sometimes you will get an additional clue from the number span—it will be about five numbers wide at the driver gate, as opposed to about three numbers wide on the false gates. Park wheel one at a number of your choosing. Now run wheel two around five numbers at a time, returning to the driver gate and trying the handle each time. If the safe does not open, park wheel one five numbers higher, and run wheel two around five numbers at a time, returning to the driver gate and trying the handle each time. This process of elimination sounds harder than it actually is. Following is a chart that will clarify what I am talking about. DG stands for Driver Gate. You can copy this chart and use it in the field.

Tip: do not scramble the wheels after each combination you try. After dialing the first combination on this list, you should not move wheel one until you are finished with these 17 combinations. Notice that I never put the wheels closer than ten numbers apart.

The time-saving way to dial these combinations is:

3L-20,	2R-10,	1L-DG
	1R-05,	1L-DG
	1R-00,	1L-DG
	1R-95,	1L-DG
	1R-90,	1L-DG
	1R-85,	1L-DG
	1R-80,	1L-DG
	1R-75,	1L-DG
	1R-70,	1L-DG
	1R-65,	1L-DG
	1R-60,	1L-DG
	1R-55,	1L-DG
	1R-50,	1L-DG
	1R-45,	1L-DG
	1R-40,	1L-DG
	1R-35,	1L-DG
	1R-30,	1L-DG

8. The Madden Manipulation Aid for straight-tailpiece locks.

If the handle does not rotate after any of the above combos, we move wheel one up five numbers to 25. Thus, we dial:

3L-25,	2R-15,	1L-DG
	1R-10,	1L-DG
	1R-05,	1L-DG
	1R-00,	1L-DG
	1R-95,	1L-DG
	1R-90,	1L-DG
	1R-85,	1L-DG
	1R-80,	1L-DG
	1R-75,	1L-DG
	1R-70,	1L-DG
	1R-65,	1L-DG
	1R-60,	1L-DG
	1R-55,	1L-DG
	1R-50,	1L-DG
	1R-45,	1L-DG
	1R-40,	1L-DG
	1R-35,	1L-DG

If the handle still does not rotate, we move wheel one up five more numbers to 30. Thus, we dial:

3L-30,	2R-20,	1L-DG
	1R-15,	1L-DG
	1R-10,	1L-DG
	1R-05,	1L-DG
	1R-00,	1L-DG
	1R-95,	1L-DG
	1R-90,	1L-DG
	1R-85,	1L-DG
	1R-80,	1L-DG
	1R-75,	1L-DG
	1R-70,	1L-DG
	1R-65,	1L-DG
	1R-60,	1L-DG
	1R-55,	1L-DG
	1R-50,	1L-DG
	1R-45,	1L-DG
	1R-40,	1L-DG

If the safe does not open, we move wheel one up five numbers to 35, and repeat the process. And so on, until it opens. Notice that whatever number I use for wheel one, I start wheel two ten numbers below it and stop wheel two ten numbers above it.

You will be shocked at how fast you can open a Sentry safe with this method. Try it. As Jim Carrey would say, you'll like it a *lawt*. I promise.

See ya next month.

TNL

A Tough Interview With UL®

by Dave McOmie

One continual point of confusion for those of us who work on safes is Underwriter's Laboratories — their position, their power, their prominence in the industry. To rectify this learning deficit, I decided to pose a few questions to UL. The first round of questions and answers appeared in the Premier issue of The National Safeman back in 1992. Given the vagueness of some of UL's answers, I faxed a few follow-up questions to Lanny Gray, UL's Engineering Group Leader. One of the nicest guys you will ever meet, Lanny is gifted with a politician's gift for answering without really answering. But whenever I felt a question was being avoided, I followed up. . . . again and again. And Lanny, ever the good sport and gentleman, patiently responded . . . again and again. For that I am grateful. What follows is the product of our ongoing correspondence, which, with this installment, begins its seventh year. My, how time flies.

••••••••••••••••••••

DM: *One of the unsettled controversies among safemen concerns the removal of UL burglary labels after drilling a safe open. What is UL's official position regarding the status of the label? Should it be removed?*

UL: Our Label Program covering these products is limited to a factory only inspection. At that time the product is Listed. We would say that the safe technicians would not be obligated to remove the UL label. The owner of the product should make the decision as to whether the label is to be removed or not. UL would take the position that any product modified in the field is not the same as it was when it left the factory, and as such, is not technically UL Listed.

DM: *Oh boy, we are in muddy waters already! You say that "any product modified in the field. . . is not technically UL Listed." Hmmm, let's examine that. Surely a new coat of paint, which modifies the product, would not result in UL disavowing the UL listing of any particular safe. Similarly, if a safe technician replaces a boltwork screw with a different type than was on the safe originally, this modifies the product but presumably would not result in a safe that is "not technically UL Listed." For the sake of clarity, it would help if you stated exactly what constitutes a field modification of the type that can cause a safe to lose its UL listing.*

UL: We would not correctly list all of the field modifications that may be considered major or minor changes or revisions.

DM: *It would be unreasonable of us to expect UL to provide an exhaustive list of field modifications of the type that can cause a safe to lose its UL listing. But it is perfectly reasonable to ask what you mean when you say that "any product modified in the field. . . is not technically UL Listed." What does this mean?*

UL: It means that UL reserves the right to make these judgment calls on a case by case basis. To my knowledge, however, it has never occurred.

DM: *What if there was a burglary, and an inspection revealed that the safe had been drilled and repaired by a safe technician prior to the burglary. If the insurance company asked, would UL tell them that the safe was "not technically UL Listed"? This is important, because if it were to happen on a TRTL-30x6 and result in a multi-million dollar loss, the insurer could conceivably deny the claim if UL told them that the label was void.*

UL: That is a question our legal staff would have to respond to on a case by case basis.

DM: *Why? If it is UL's position that "any product modified in the field is not. . . technically UL Listed", then why would UL have to respond on a case by case basis? Presumably, a safe that has been drilled open and repaired has been "modified." If so, then doesn't consistency require UL to take the categorical position that all drilled safes are technically not UL Listed?*

UL: Yes, that is our official position. Our Engineering Staff at Northbrook, IL. could inspect the safe to evaluate it and make a determination whether it met UL requirements.

DM: *So the only way a safe owner can be sure his/her safe is technically UL Listed, is to fly out a UL engineer to inspect the safe?*

UL: Well, it depends on the modification. If, for example, an end-user were to call and inform us that he had painted his safe, we could handle the situation over the phone. But if the end-user were to make modifications in the boltwork, and wanted UL's guarantee that the listing was valid, we would more than likely have to send an engineer out to inspect the safe.

DM: *Does UL ever solicit assistance or advice from safe opening experts, or does UL rely exclusively on its own in-house people?*

UL: For tests of UL-rated safes, we do not seek outside help for our tests. The basic Standard UL-687 is entitled "Burglary Resistant Safes" and we consider our attacks of a burglarious type given the net working time and tool compliment. Our training is from one team to the next team. We are guided by the requirements as set forth in the Standard UL-687, Burglary Resistant Safes, Eleventh Edition, December 20, 1991. Our responsibility is to be as consistent and fair as we can be considering these are subjective tests. Certainly we are interested in refining our method and techniques. Our team has been active in taking classes over the last several years at SAVTA and ALOA. I think UL has tried to be consistent with its testing, considering our rating system should serve as a reference for the insurance industry, consumers and other code officials.

I think we can move toward establishing different techniques if everyone involved, such as the manufacturers, consumers and other interested parties want us to move in that direction. Personally, it is one of the reasons we need to be involved with you — to better understand what is actually happening in the field. Moving toward new and additional requirements is a process that does take time, and we are willing to upgrade, if that is what is deemed necessary by everyone.

DM: *Let me follow up on your point about UL Standards. You seem to be saying that UL is guided in its tools and techniques by the standards set forth in UL-687. But what justifies the standards?*

UL: The standards are the product of a consensus process involving UL Technical Staff, safe manufacturers, the Burglary Protection Council, and broad consumer groups.

DM: *By the way, who or what is The Burglary Protection Council? Please provide us with the names of those on the council, their positions on the council, and their company affiliations.*

UL: UL does not publicize this information.

DM: *What role does The Burglary Protection Council play in helping direct or formulate UL policy?*

UL: The Burglary Protection Council meets only once every year or two, and is not involved in day to day operations at UL.

DM: *What "broad consumer groups" are involved in the "consensus process" that you mentioned?*

UL: Occasionally UL gets input from end-users who have comments to make about a safe they own.

DM: *That brings me to a question about the Retest and Reexamination Program. It used to be that once a safe passed the test for a particular burglary label, that safe had the label for life. A couple of years ago, UL decided that all safes would have to be periodically retested to keep their label. What was the motivation behind the new program?*

UL: UL has considered a Retest and Reexamination Program for quite some time. The industry is in favor of this program, and we have now completed our second year. One reason behind the program is the improvements in tools and testing techniques even while the Standard has not basically changed. New manufacturers of recently qualified products claimed they were at a competitive disadvantage with the same rated product. This program may tend to even out these preconceived differences and make a more level selling field.

DM: *Was this program the product of a consensus process involving UL Technical Staff, safe manufacturers, the Burglary Protection Council, and broad consumer groups?*

UL: Yes, but the major players were UL Technical Staff and the Industry Advisory Council (IAC).

DM: *Who or what exactly is the IAC? Please provide us with the names of those on the IAC, their positions on the IAC, and their company affiliations.*

UL: UL does not publicize this information.

DM: *You say that "one reason behind the program is the improvements in tools and testing techniques even while the Standard has not basically changed." What new tools and techniques are you talking about?*

UL: The most significant addition to our tool complement is the worm-drive, commercial-duty circular saw, used in conjunction with a 3/32" carborundum blade. We have also added a Magnum 357, a Collins Rig, and a magnetic drill press to aid us in doing hardplate tests.

DM: *If I am a safe manufacturer, and have a safe tested tomorrow that passes the TL-30 test, how long before this safe needs to be retested?*

UL: Seven years.

DM: *Will the safe have to be retested even if the Standard remains unchanged and if UL changes nothing in their tool complement or technique?*

UL: Perhaps not. These judgments will be made on a case by case basis.

DM: *Most of the working safemen that I speak with agree that UL does a fine job testing safes, not because UL possesses technical expertise, but because UL attacks safes the way most burglars do, only better. Anyone who has observed a test has come away impressed by UL's team. They are vicious, and they are good at what they do. But when it comes to combination locks, electronic locks, and high-security keylock, some of us are skeptical of UL's ability to properly test a lock's resistance to being compromised. Here are a couple of examples: Shortly after the LaGard electronic locks became UL Listed, a few of us working in our garages figured out how to spike the locks open in about five seconds. Additionally, many key locks, such as those made by LaGard, Sargent & Greenleaf, and Mauer, are UL Listed for pick resistance, even though they can be surreptitiously compromised in a matter of minutes by an expert. If UL is serious about testing keylocks for pick resistance, wouldn't it be a good idea to consult technicians who are experts at picking high-security keylocks before granting a lock a UL Listing?*

UL: UL has always used lock consultants and other experts qualified in their field to conduct our lock picking tests as set forth in UL 437, Key Locks, Fifth Edition, 1986. Products not thought to comply with our requirements can be reviewed and examined through our Follow-Up Services Department.

DM: *There are only a handful of technicians in the United States proficient at compromising high-security keylocks, such as those used in high-security safes. Out of curiosity, who did you use to test the Mauer, LaGard, and S&G keylocks that are now UL Listed?*

UL: We would rather not name names, but we are in the process of using more and more independent experts.

DM: *When UL starts a particular test for burglary resistance, and then goes to another type of test, does the stopwatch start over?*

UL: If one attempt is tried and given up, the second attempt would start at zero time. There may be some exceptions to this, but normally the above procedure would be followed. On a series of tests, we would normally arrange our test schedule so the least destructive tests were conducted first. Normally we would not want to do a test where it is likely to cause a lockout and cause excessive down time before the next test.

DM: *There is a company in Minnesota, Security Products Company (not to be confused with Security Corporation, the California company that was importing Kumahira products) that puts their own TL-30 label on safes they manufacturer. This seems to be a flagrant misrepresentation to the public and to insurance companies that unknowingly accept the label as satisfying the requirements set forth by UL. What is UL's position with respect to cases like this? Does UL have trademark rights to terms such as "TL-15" and "TL-30"? If not can anything be done to protect the public from this misleading practice?*

UL: UL does not have trademark rights on the terms "TL-15" and "TL-30". We do have trademark rights for words or symbols such as "Listed" and "UL" in a circle. The metal tag would be designated as just a manufacturer's nameplate, and we would not object to the reference of TL-30 construction as long as reference to UL was not made on the product or in advertising literature. If, on the other hand, it is determined to be a case of misuse of the label, our Follow-Up Service Department should be contacted to process a field complaint.

DM: *Can you tell us what you mean by "misuse of the label"?*

UL: Any unauthorized mention whatsoever of UL, whether it be on the safe, the label, or in brochures or advertisements of any kind is a misuse of our Mark.

DM: *What about a salesperson who verbally mentions UL in connection with a safe that is not actually UL Listed?*

UL: If there is no Listing for that product, that may be a misrepresentation by the salesperson that our Legal Department may investigate.

DM: *So, by "misuse" you mean any explicit connection made between the label and UL?*

UL: That's right.

DM: *So as long as Security Products Company doesn't mention UL in any way, shape, or form, they can go on putting TL-30 labels on their own safes. In other words, they have found a legal loophole through which the public can potentially be misled, and UL is powerless to do anything about it.*

UL: UL always uses the term "Authority Having Jurisdiction." I think we have to give credit to the consumer, user, insurance company, or other interested parties who are responsible for determining that a product has a UL Listing Mark. For products of this type, a quick call or fax to UL or a review of the product directory will indicate those companies having UL status.

DM: *One last question: What is the status of the vault panels that are made of wood? Are they still UL approved, even though they have been causing problems all over the country?*

UL: Yes, the panels are still approved under 608, and we still qualify them. There is some question about whether the problems are due to the panels themselves or due to problems in transporting and installing the panels. I am not in a position to comment in any more detail than this.

DM: *Well, that about wraps it up. Thank you, Mr. Gray, for taking the time to answer all these hard-hitting questions.*

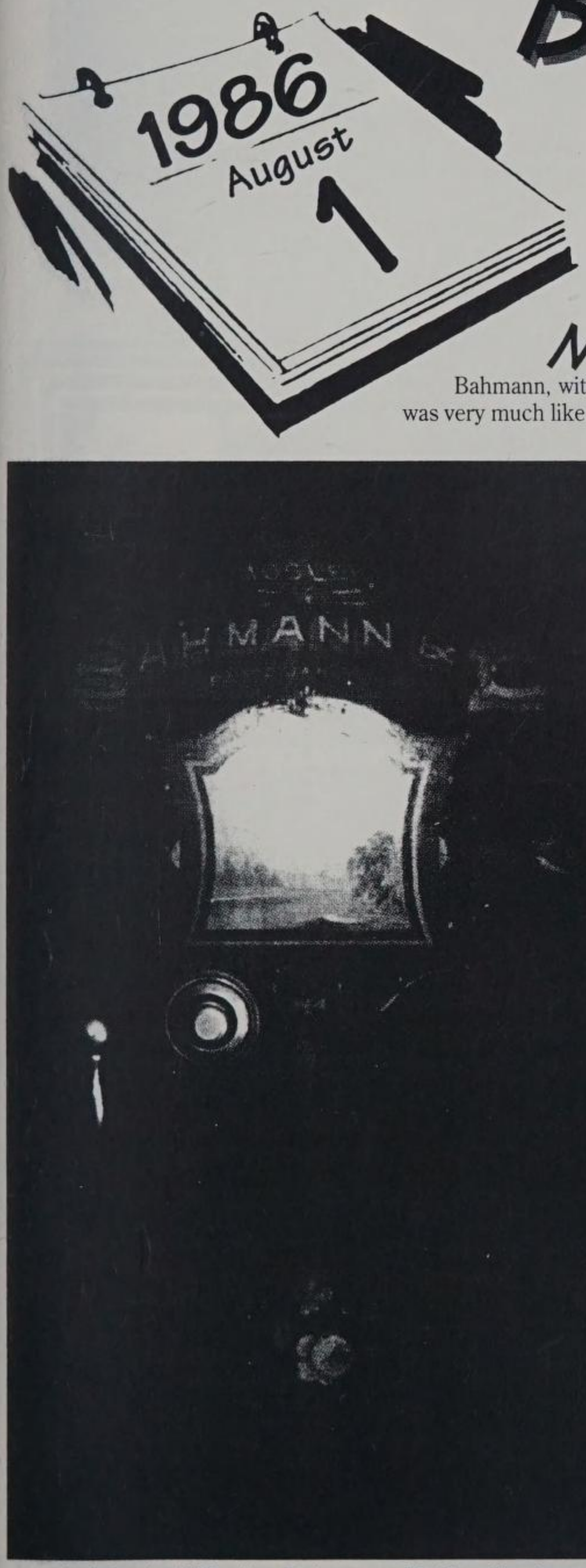
UL: Thank you for asking them, Dave. Call or fax me if you come up with any more new questions.

DM: *I will. Thanks again.* TNL

TEN YEARS LATER:

BACK TO BAHMANN

by Dave McOmie

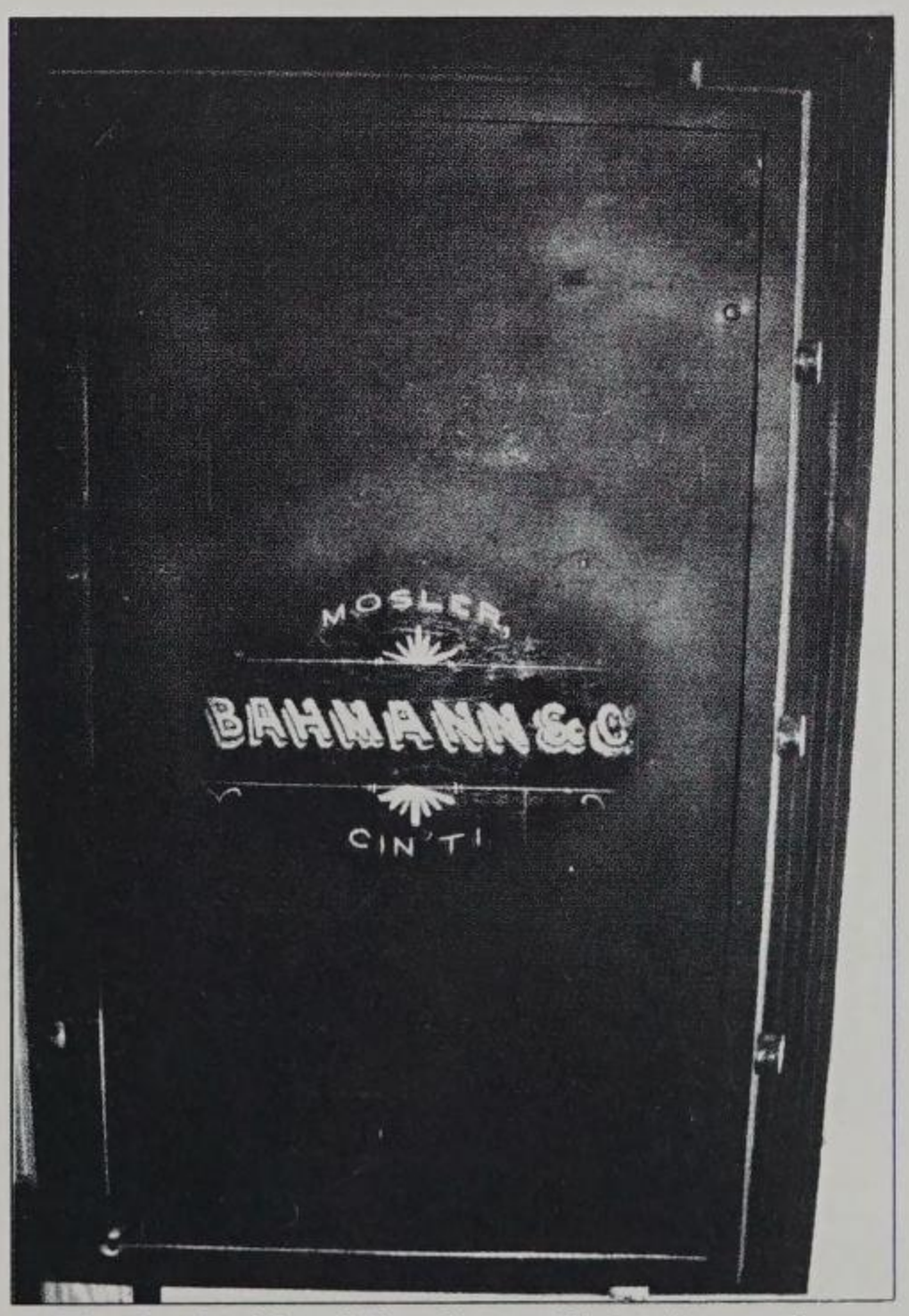


My debut article in this magazine, ten years ago this month, was devoted to a Mosler-Bahmann that I opened after a burglary. It was a very traditional Bahmann, with a free-spinning L-handle on the outside and a Yale 062-1/2 on the inside. It was very much like the traditional Mosler-Bahmann shown in *Photographs 1 through 3.*

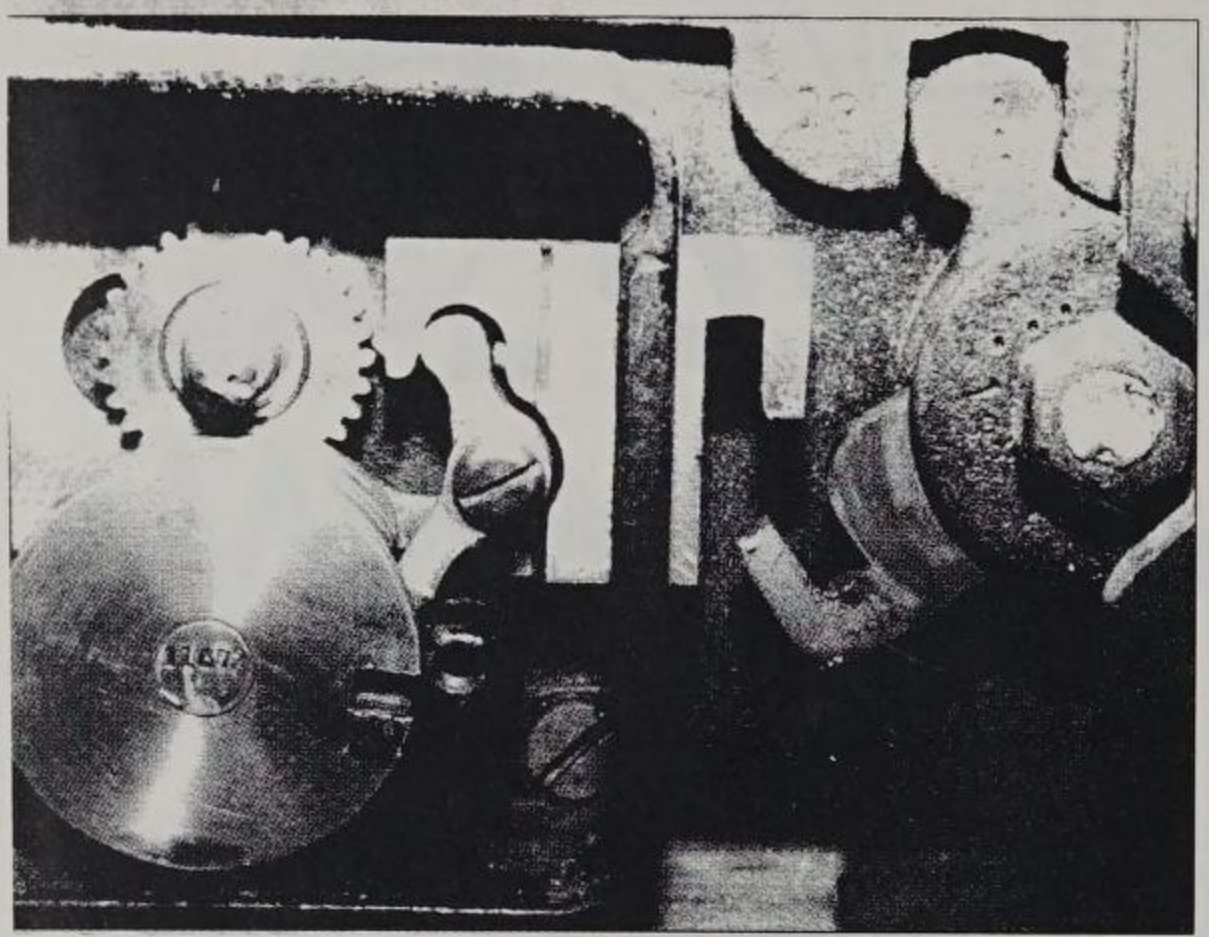
Well, I thought it fitting, in this anniversary article, to show you a few oddball Mosler-Bahmann fire safes that have surprised me over the years.

Take a look at the safe in *Photograph 4.* At first glance, the T-handle, the concealed hinge blocks, and the border roping would make many of us think "Halls." But it's not.

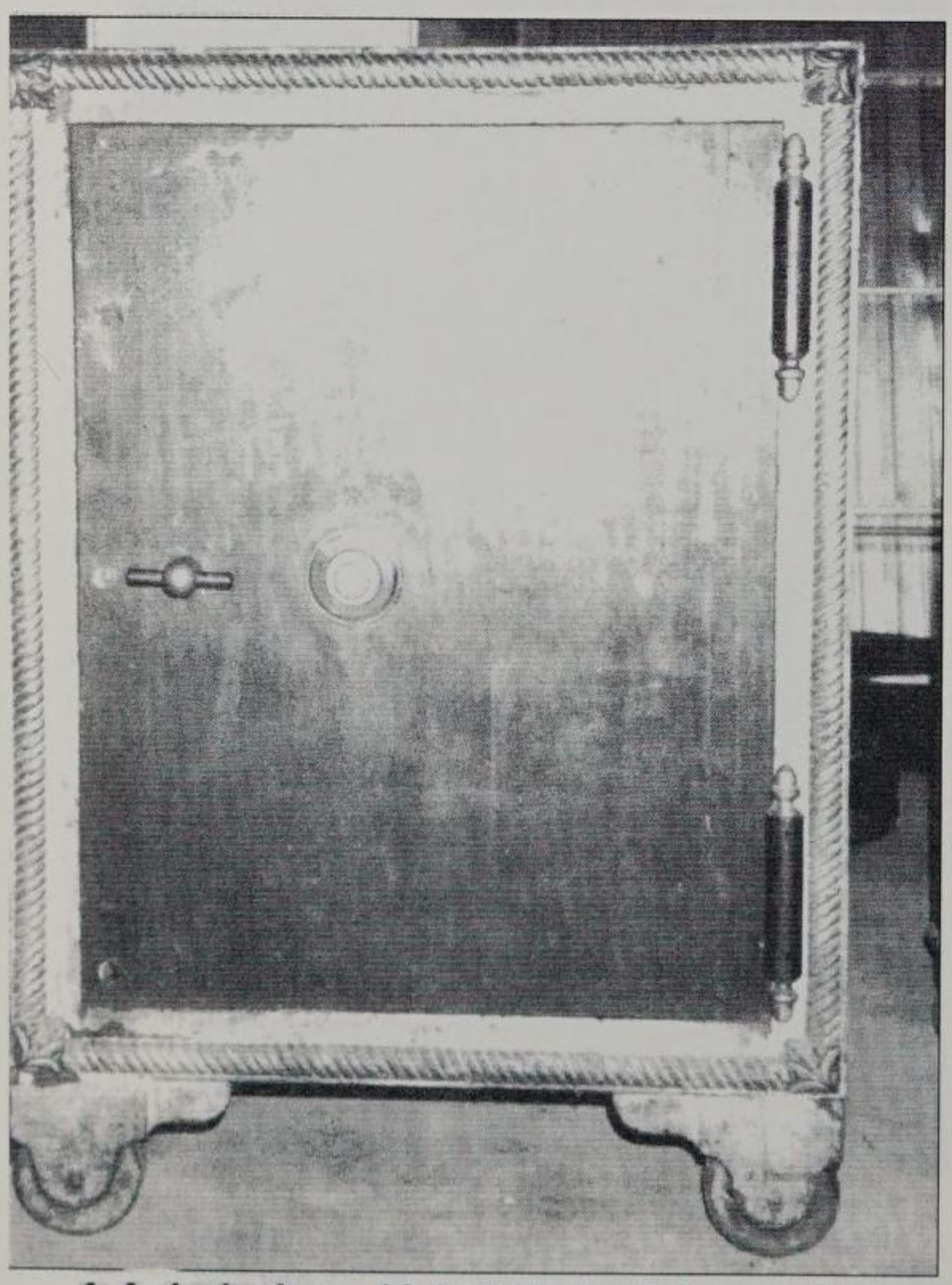
1. A typical Mosler-Bahmann. Notice the tear-shaped L-handle.



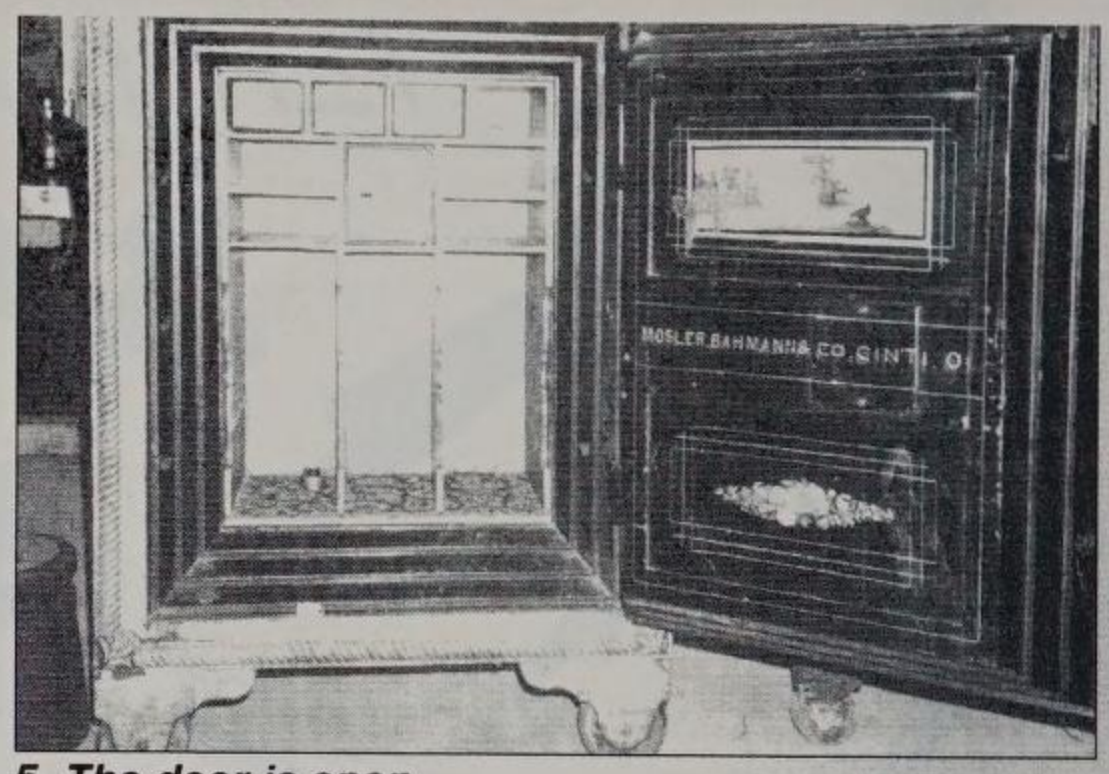
2. The back side of the door with back panel attached. This is a hinged back panel. To gain access to the lock and boltwork, back out the two screws on the opening side of the panel and swing it open.



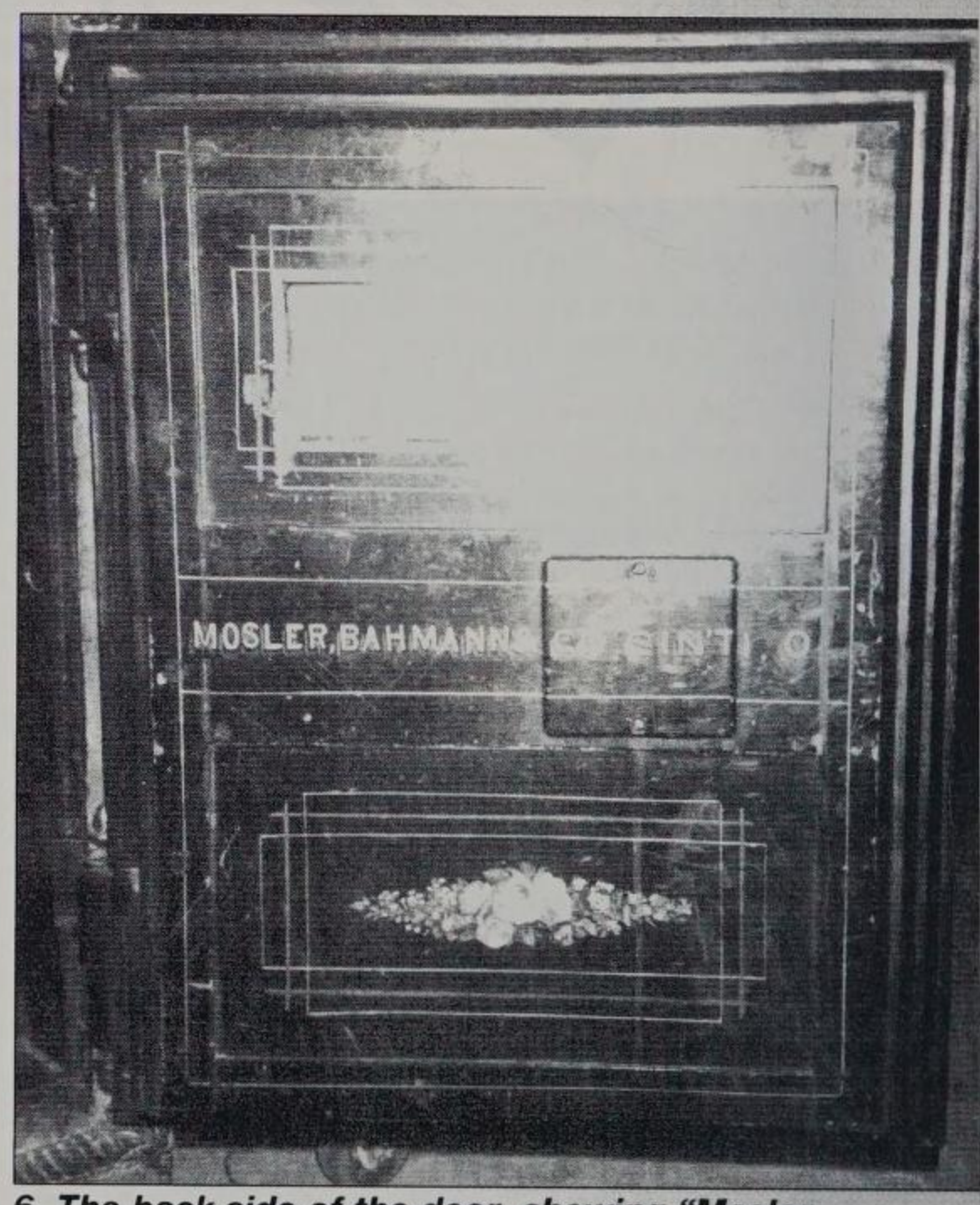
3. The modified Yale 062-1/2. The modification is the hook in the lockbolt, which pulls the slide over and engages the handle cam. Without the slide being pulled over, the handle cam is not engaged and the handle will free spin. In this position, the lock is open and the boltwork retracted.



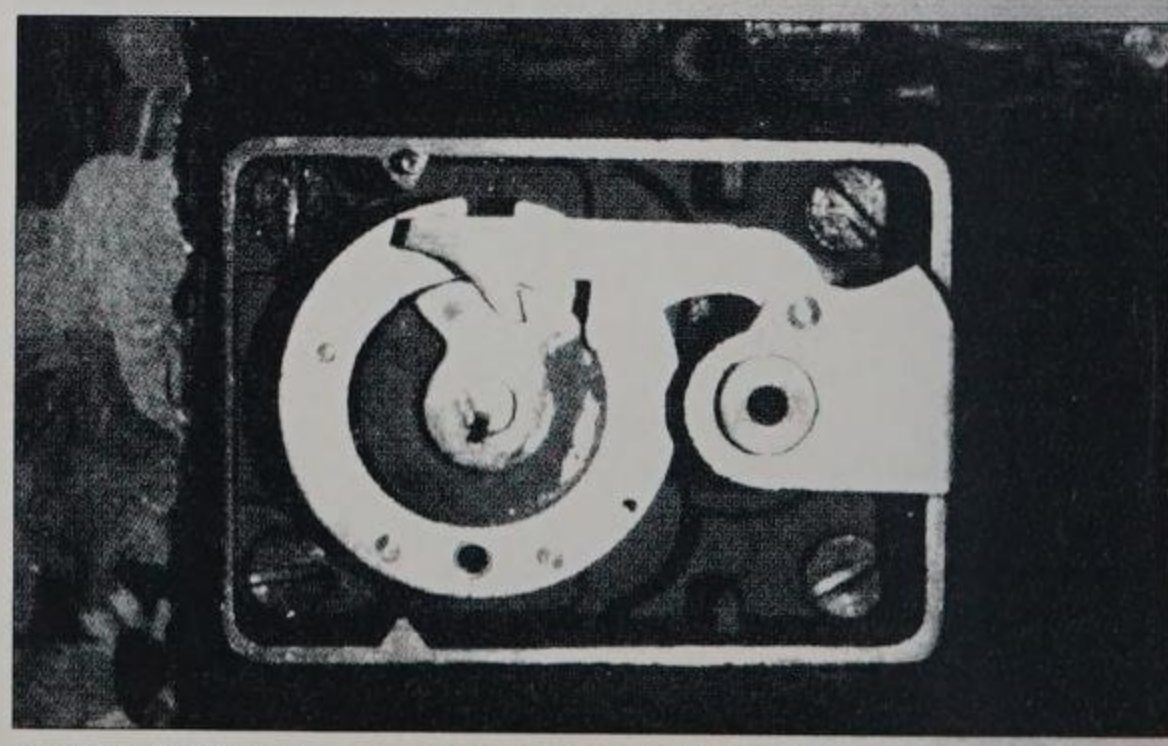
4. A single-door odd-duck Mosler Bahmann. Notice the presence of a T-handle rather than a free-spinning L-handle.



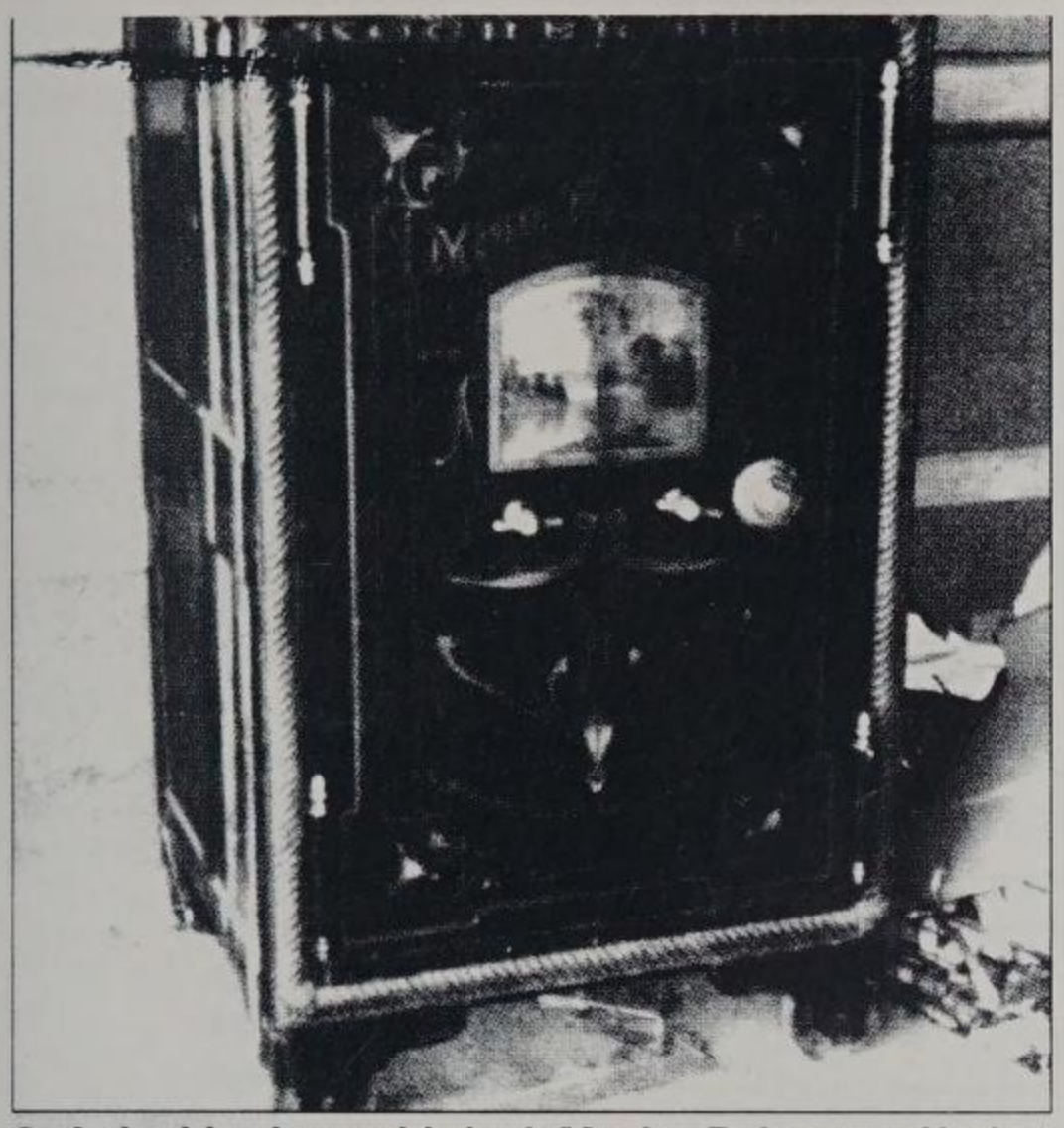
5. The door is open.



6. The back side of the door, showing "Mosler-Bahmann" in beautiful gold-leafing.



7. The S&G 6800 series roller bolt lock.



8. A double-door odd-duck Mosler Bahmann. Notice the presence of a T-handle rather than a free-spinning L-handle.

Photograph 5, shows the open safe. No doubt about it, this is a Mosler-Bahmann. No free spinning L-handle, no hinged back cover, and, as we will see, no 062-1/2.

Photograph 6, shows the back side of the door. Take a look and confirm it for yourself—there is no hinged back panel, but there is a removable access panel to the lock.

Photograph 7, takes us in for a peek at the lock. This is most certainly not a Yale 062-1/2. This is a Sargent & Greenleaf 6800 series roller bolt lock!

Photographs 8, and 9, are of a double-door version of the last safe—an oddball Mosler-Bahmann, with the same S&G lock inside.

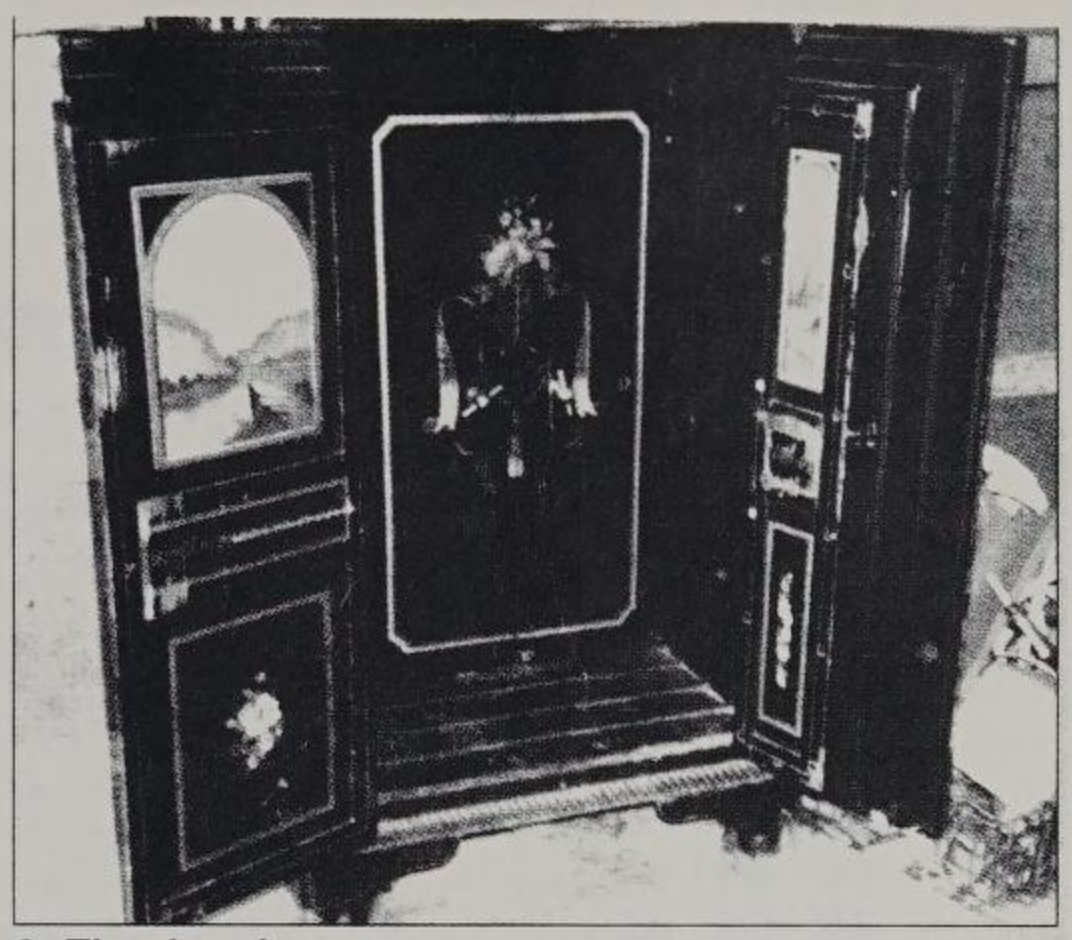
So where should we drill a Mosler-Bahmann? Well that depends on which lock is on the inside. And we can (usually) tell which lock is on the inside by the handle and dial. A free-spinning L-handle on a Mosler-Bahmann indicates an 062-1/2. A rigid T-handle on a Mosler-Bahmann indicates an S&G 6800 series lock.

The dials provide additional clues. Let's look at the two most popular dials used by Yale and S&G 100 years ago *(Photograph 10.)*

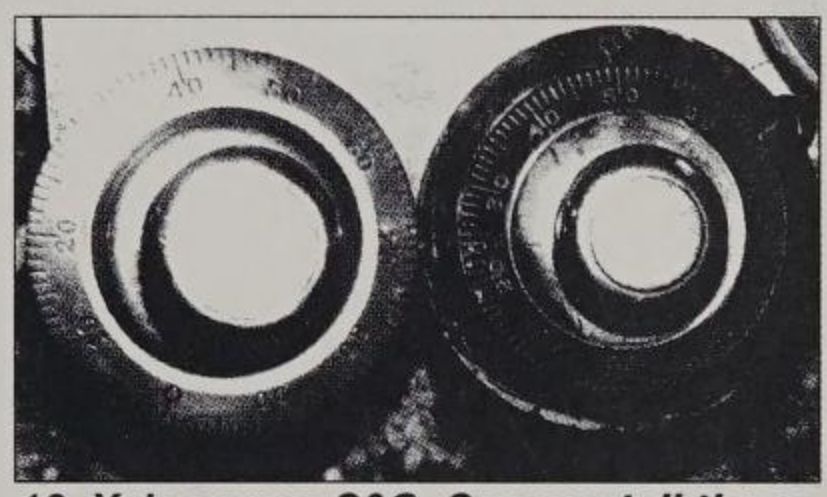
First of all, look for a lock manufacturer's name. If the dial says "S&G" or "Yale" then identification is made. But sometimes the lock manufacturer's name is not on the dial. Some safe manufacturers wanted their own name on the dial, and S&G and Yale were quick to comply.

If there is no lock manufacturer's name on the dial, then we need to examine it for clues. Look carefully at the two dials in *Photograph 10.* Yale is on the left, S&G on the right. There are several clues which help distinguish them. One clue is the star opening index which was used by S&G (and a few others, such as Eagle,) but generally not by Yale. Another clue is the 0 on the Yale dial and the 100 on the S&G dial. Still another clue is the way the number "1" is written, as in the number 10. Yale used a fancy "1" while S&G generally used a straight line.

With those clues, we can tell which dial, and thus which lock we are facing. There is one caveat: the dials are interchangeable. The Yale dial can be used with the S&G lock and vice versa, since the spindle threadings are identical. But we must play the odds, and the odds favor original equipment being used with an old steel dial.



9. The door is open.



10. Yale versus S&G. Can you tell them apart?

Remember, these old metal dials are generally not removable, and for three reasons we don't want to break them off. First of all, we don't want to risk breaking the spindle off below the surface of the dial. Second, we don't want to replace a beautiful antique dial with a modern zamac wonder that will wear out in five years (or less). Third, it just isn't necessary.

The primary reason for removing a dial is to allow the driller to drill straight rather than at an angle. But we can accomplish that goal without removing either dial. Stick with McOmie's Drill Points and ye shall be saved from angle-drilling and needless damage.

McOmie's Drill Points for the Yale 062-1/2 are as follows: For a great scope and transfer hole, drill straight in from just outside the dial ring at 57. This drill point gives you plenty of leeway—you can accidentally angle off a little and not hurt anything. For a great scope hole, drill straight in from just outside the dial ring at 84. Insert scope and look toward spindle center. You will be able to see the fence and the wheels—no transferring necessary! The only drawback with this drill point is that is gives you no leeway—you must drill straight as an arrow or you risk missing the lock entirely. Reminder, the 062-1/2 is an indirect-drive lock, the offset from dial center to actual wheel center is 1-1/4" down.

McOmie's Drill Points for the S&G 6800 locks are as follows: For a great scope and transfer hole, drill straight in from just outside the dial ring at 65. This drill point gives you plenty of leeway—you can accidentally angle off a little and not hurt anything. Reminder: the 6800 series locks used in most cast iron fire safes (including Mosler-Bahmann) are direct-drive locks.

Well gang, that wraps up this month and my first decade with *The National Locksmith.* It has been a pleasure and a privilege serving you in this capacity. See you next month, as we enter decade number two! TNL

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The National Locksmith®
National Publishing Company
1533 Burgundy Parkway • Streamwood, Illinois 60107